



Marulan Quarry

Response to submissions – Part 3 of 3

Global Quarries Australia Pty Ltd

03 June 2025

→ The Power of Commitment



Appendix I

Aboriginal Cultural Heritage Assessment



Marulan Quarry EIS

Aboriginal Cultural Heritage Assessment

Global Quarries Australia Pty Ltd

29 May 2025

REGULATOR DOCUMENT



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Executive summary

Global Quarries Australia Pty Ltd (Global Quarries) proposes to develop a quarry for hard rock extraction to the west of Marulan, New South Wales. The quarrying activities are proposed to take place over a period of 18 years to supply the Sydney and regional markets with high grade cement feedstock. The proposed works include auxiliary infrastructure to facilitate quarrying activities at the site and access to the Hume Highway.

GHD have been engaged by Global Quarries to undertake Aboriginal archaeological and cultural heritage assessment for the project. The Aboriginal Cultural Heritage Assessment has been undertaken in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECC 2010).

Aboriginal parties or individuals registered their interest in the project and are referred to as Registered Aboriginal Parties (RAP) throughout this document. RAPs were requested to provide cultural information about the Project Area and were provided the proposed field survey and test excavation methodology for review and input. Comments on the project and methodology were received from three RAP groups. No specific comments or information about the cultural values or historical connections unrelated to Aboriginal sites or objects in the Project Area was provided at this time. A number of RAPs also participated in the field surveys and test excavations. The details regarding individual RAPs is detailed in section 4 of this report.

RAPs were issued with the DRAFT ACHA report and AR for their review and comment on 25 September 2024. Follow up emails were made to ensure each RAP had received the report and if they had any comments. Written comments were received from Jennie Gordon of Mulwaree Aboriginal Community, who requested that all previous comments be included within the report from the initial assessment works completed by Niche in 2021. No additional comments were received from the RAPs

A number of previous archaeological studies have been completed within and close to the current Project Area, providing a good understanding of the archaeological landscape in the surrounding region. A stone arrangement has been recorded near the Lynwood Quarry region that suggests that the area was associated with ceremonial and longer-term use by Aboriginal people and holds significant cultural value. Areas of highest archaeological potential have been identified in close proximity to water, and have been identified across a variety of landscapes, including spurs, river/creek flats, hilltops, and ridges.

The archaeological field survey was conducted over two programs. The first program was completed on 7 and 8 December 2021. The field survey team consisted of Dierdre Lewis-Cook (Archaeologist, Niche Environment and Heritage), Riley Finnerty (Archaeologist, Niche Environment and Heritage), Tyronne Bell (Registered Aboriginal Party, Thunderstone Aboriginal Cultural Services), and Merekai Bell (Registered Aboriginal Party, Yurwang Gundana Cultural Heritage Services). This program assessment was completed within Lots 3 and 4 of DP 247199 and Lot 7001 of DP 1025585. The second program was completed on 11 September 2024. The field survey team comprised of Renée Regal (Senior Heritage Consultant/ Director Regal Heritage [PJLALC]), Chris McAllister and Ashley Croker (Registered Aboriginal Party, Pejar Local Aboriginal Land Council). This programs assessment was completed of the proposed intersection works at the corner of Winfarthing Road and the Hume Highway. The entirety of the Project Area was accessible to the survey team.

Based on the findings of the field survey and the previously devised methodology completed in consultation with all Registered Aboriginal Parties (RAPs), test excavations were completed within areas of archaeological potential where disturbance was minimal. Test excavations were undertaken over seven days between 28 February and 18 March 2022. The field excavation team consisted of Carly Todhunter (Archaeologist, Niche Environment and Heritage), James McGuinness (Archaeologist, Niche Environment and Heritage), Vergilio Serra (Global Quarries), Aryssa McAlister (RAP, Pejar Local Aboriginal Land Council [PLALC]), John Carriage (RAP, Thoorga Nura), Bron Ireland-Bell (RAP, Thunderstone Aboriginal Cultural Services), Nicole Ireland-Vuacera (RAP, Thunderstone Aboriginal Cultural Services), Tyronne Bell (RAP, Thunderstone Aboriginal Cultural Services), Merekai Bell (RAP, Yurwang Gundana Cultural Heritage Services), Tim Stabbs (RAP, Yurwang Gundana Cultural Heritage Services), Steve Johnson (RAP, Corroboree Aboriginal Corporation), Todd Pintaric (RAP, Corroboree Aboriginal Corporation), Brenden Taylor (RAP, Murra Bidgee Mullangari) and Hika Tekowhai (Walbunja). Areas of archaeological potential on the crest of Shelley's Hill and in proximity to Narambulla Creek were targeted by the

excavation program. Areas of low potential on the plain were not targeted given that these areas are unlikely to yield any Aboriginal cultural material.

A total of three 1 x 1 metre test pits and 46, 0.5 x 0.5 metre test pits were excavated across two areas of previously identified archaeological potential. Other areas of potential identified during the survey were not subject to testing as these areas were determined to have low archaeological potential. A total of 40 stone artefacts were recovered from 18 test pits, with 16 of the artefacts recovered from the lower slopes of Shelley Hill and 24 of the artefacts recovered within proximity to Narambulla Creek. Given the existing slope, it is unlikely that these artefacts remain in situ and have most likely washed down slope. Seven new Aboriginal sites were registered: Narambulla Creek ASF1 (51-6-0918), Narambulla Creek ASF2 (51-6-0919), Narambulla Creek ASF3 (51-6-0920), Narambulla Creek ASF4 (51-6-0921), Narambulla IA1 (51-6-0926), Narambulla IA2 (51-6-0916), and Narambulla IA3 (51-6-0917) with limited site extents. Registered Aboriginal sites MF1 (51-6-0093) and MF2 (51-6-0095) were updated to reflect the identification of additional cultural material.

Consultation with RAPs during field work did not identify any cultural values or oral history about the Project Area.

The scientific assessment of the Aboriginal sites within the Project Area determined that the cultural material is comprised of locally sourced lithologies and typologies associated with everyday use. This material is unlikely to be *in situ* and offers limited research potential. The sites were therefore considered to be of low scientific (archaeological) significance. The exception to this is Narambulla Creek ASF3 (51-6-0920) which is considered to be of low-moderate scientific significance due to a higher density of artefactual material.

Recommendations have been formulated to reflect the level of scientific significance attributed to the Aboriginal sites, and the cultural values of these places provided by the RAP in the ACHA report.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

Recommendations

The following recommendations are based in consideration of the statutory requirements under the *National Parks and Wildlife Act 1974*, as well as the recommendations of previous assessments within the Project Area, the interests of the Aboriginal stakeholder groups, and the likely impacts of the proposed development.

Recommendation 1: Development of an Aboriginal Cultural Heritage Management Plan

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared in consultation with the RAPs before commencement of ground disturbing works that have the potential to impact the surface. The ACHMP should be reviewed and endorsed by the Department of Planning and Environment – Environment and Heritage.

The ACHMP will address project impacts and will provide details on:

- Aboriginal sites identified for the project
- Management measure and their progress towards completion
- The surface collection and subsurface salvage of areas where there will be direct impact to cultural material
- Continuing consultation and the involvement of RAPs
- Cultural Awareness Inductions for all contractor staff
- Protocols for Aboriginal cultural material finds
- Protocols for suspected human skeletal remains
- Provision for review and updates of the ACHMP.

Recommendation 2: Naming of Project Infrastructure

It has been recommended by the RAPs of the project that through consultation with local Aboriginal community members (where appropriate) the proponent uses locally accepted First Nations language words for the naming of Project infrastructure.

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1. Introduction

GHD Pty Ltd was commissioned by Global Quarries Australia Pty Ltd (Global Quarries) to undertake an Aboriginal Cultural Heritage Assessment for a proposed quarrying development at Marulan, NSW. The project proposes to develop a quarrying operation at Marulan in the Southern Tablelands of NSW (the project). The focus material for the quarrying activities is a tuffaceous aggregate for the supply of high-grade cement feedstock to the Sydney and regional markets over an approximate 18-year period. The project will also establish a progressive rehabilitation program of the area through the emplacement of VENM, ENM and other clean fill materials.

Development consent for the project will be sought under Division 4.7 of Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) (State Significant Development).

Much of the archaeological assessment and reporting for this ACHA was undertaken in June 2019 to November 2022 in accordance with the previously issued Secretaries Environmental Assessment Requirements (SEARs) issued on 13 May 2016 (SSD-9750) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (OEH 2010). An amendment to the access point off the Hume Highway on Winfarthing Road for the Project resulted in delays and the original SEARs expiring. Due to new SEARs being issued (SSD 65146459) and the amended access, a revised Aboriginal community consultation process was undertaken and updated to the existing draft ACHA and AR were made. GHD have been engaged by Global Quarries to undertake Aboriginal archaeological and cultural heritage assessment for the project. The Aboriginal Cultural Heritage Assessment has been undertaken in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECC 2010).

1.1 Purpose of this report

This Aboriginal Cultural Heritage Assessment (ACHA) report has been prepared by GHD on behalf of Global Quarries for inclusion in the Environmental Impact Statement (EIS) to support the development application under Division 4.7 of the EP&A Act.

The ACHA report provides an assessment of Aboriginal cultural heritage values for the Project Area in accordance with the SEARs and the following regulations and guidelines:

- *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005)
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHCRs) (DECCW, 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010)
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011)
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (ICOMOS, 2013a)
- *NSW National Parks and Wildlife Regulation, 2009* (National Parks and Wildlife Service, 2009).

1.1.1 Objectives

The objectives of this report, in consideration of the SEARs and the requirements of the above guidelines and regulations, are as follows:

- Identify and describe Aboriginal objects and archaeological potential for subsurface deposits within different landforms present in within the Project Area
- Identify and describe the cultural heritage values, including the significance of the Aboriginal objects that occur within the Project Area
- Describe how the requirements for consultation with Aboriginal people have been met following the ACHA process
- Present the views of Aboriginal people regarding the potential impact on cultural heritage within the Project Area
- Outline appropriate management requirements to protect and conserve Aboriginal objects that occur within the construction footprint within the Project Area

- Outline appropriate management requirements to avoid or mitigate any actual or likely harm, alternatives to harm, or if this is not possible, to manage (minimise) the harm.

1.2 Development proposal

1.2.1 Description of the proposed works

Global Quarries seeks to develop a quarrying operation on Lots 3 and 4 of DP 247199 and Lot 7001 of DP 1025585, in Marulan in the Southern Tablelands of NSW (the project). The project involves extraction of up to 500,000 tonnes per year of hard rock for the supply of high-grade cement feedstock to the Sydney and regional markets over an approximate 18-year period. The target resource is a tuffaceous aggregate and is estimated at approximately 7.7 million tonnes of saleable product at the site.

The project will also involve the progressive rehabilitation of the extraction area through emplacement of VENM, ENM and other clean fill materials. The emplacement material will be sourced through back-loading of haulage vehicles with clean fill from construction projects throughout the Sydney basin.

The project constitutes development for the purpose of an extractive industry that extracts up to 500,000 tonnes of material per year from a total resource area of more than 7.7 million tonnes. The project is therefore defined as State Significant Development (SSD) and an Environmental Impact Statement (EIS) is required to be prepared to accompany the Development Application (DA) for determination by the NSW Minister for Planning or delegate.

The project will incorporate the following activities:

- Establishment of hard rock quarry comprising an extraction pit, emplacement area, processing facilities, site offices and internal haul routes
- Construction of a new intersection with Hume Highway and the upgrade of the existing Hume Highway and Winfarthing Road intersection
- Extraction of up to 500,000 tonnes per year of hard rock from the tuffaceous hard rock target resource estimated at approximately 7.7 million tonnes at the site
- Extraction of hard rock resource by drilling, blasting for subsequent onsite processing for production of high-grade construction feedstock for the construction industries over an 18-year period
- Transportation of quarry products by road to greater Sydney, Canberra and the local area
- Importation of virgin excavated natural material (VENM), excavated natural material (ENM) and other suitable rehabilitation materials from major construction projects primarily through back-loading of haulage vehicles
- Progressive rehabilitation of the processing area, including the quarry void, using the emplaced overburden materials, and the imported VENM, ENM, and other rehabilitation materials
- Rehabilitation at the end of quarry life to create a final landform which will be safe, hydraulically and geotechnically stable, non-polluting, and which will closely resemble the original and surrounding landscape.

The design of the project and environmental investigations have been progressively developed over the last five years, with Secretary's Environmental Assessment Requirements (SEARs) for an original development application (SSD 9750) initially issued on 13 May 2019. The development application was withdrawn prior to the expiry of the SEARs on 30 June 2023 as a result of ongoing design refinements for the project

An updated scoping report was subsequently prepared and lodged with the Department of Planning, Industry and Environment (now Department of Planning, Housing and Infrastructure (DPHI)) in November 2023 as part of a new development application for the project. The SEARs for the preparation of the Environmental Impact Statement (EIS) for SSD 65146459, were issued on 21 December 2023. For Aboriginal heritage, the SEARS require:

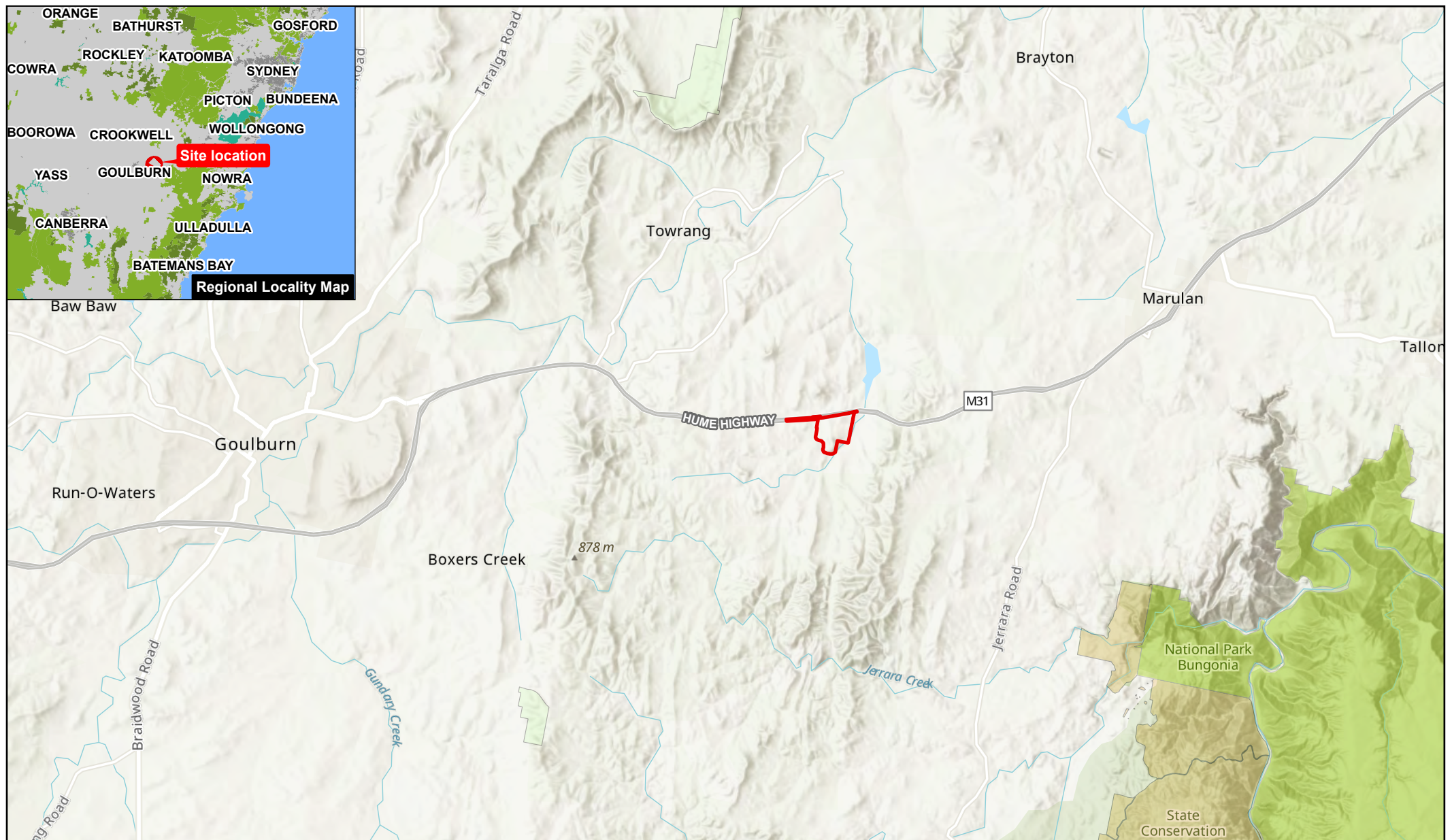
- an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage.

The SEARS also identify the following policies and guidelines that are applicable to the Aboriginal heritage assessment:

- *The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS 2013)
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010)
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

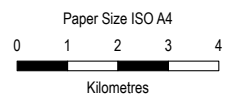
1.2.2 Site location

The area of proposed works and the Project Area for this Aboriginal Cultural Heritage Assessment includes two privately owned lots (Lots 3 and 4 of DP 247199, a lot owned by Crown Land (Lot 7001 of DP 1025585) and part of the Hume Highway road reserve in Marulan in the Southern Tablelands of NSW. Marulan is part of the Goulburn Mulwaree Council local government area (LGA) and is located approximately 163 kilometres southwest of Sydney and 122 kilometres northwest of Canberra. The study lies between Winfarthing Road and Narambulla Creek, which flows into the Wollondilly River, which runs along a north west axis between 6 and 9 kilometres from the Project Area.



Legend

- Project Application Area
- Nature Reserve
- State Conservation Area
- National Park



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

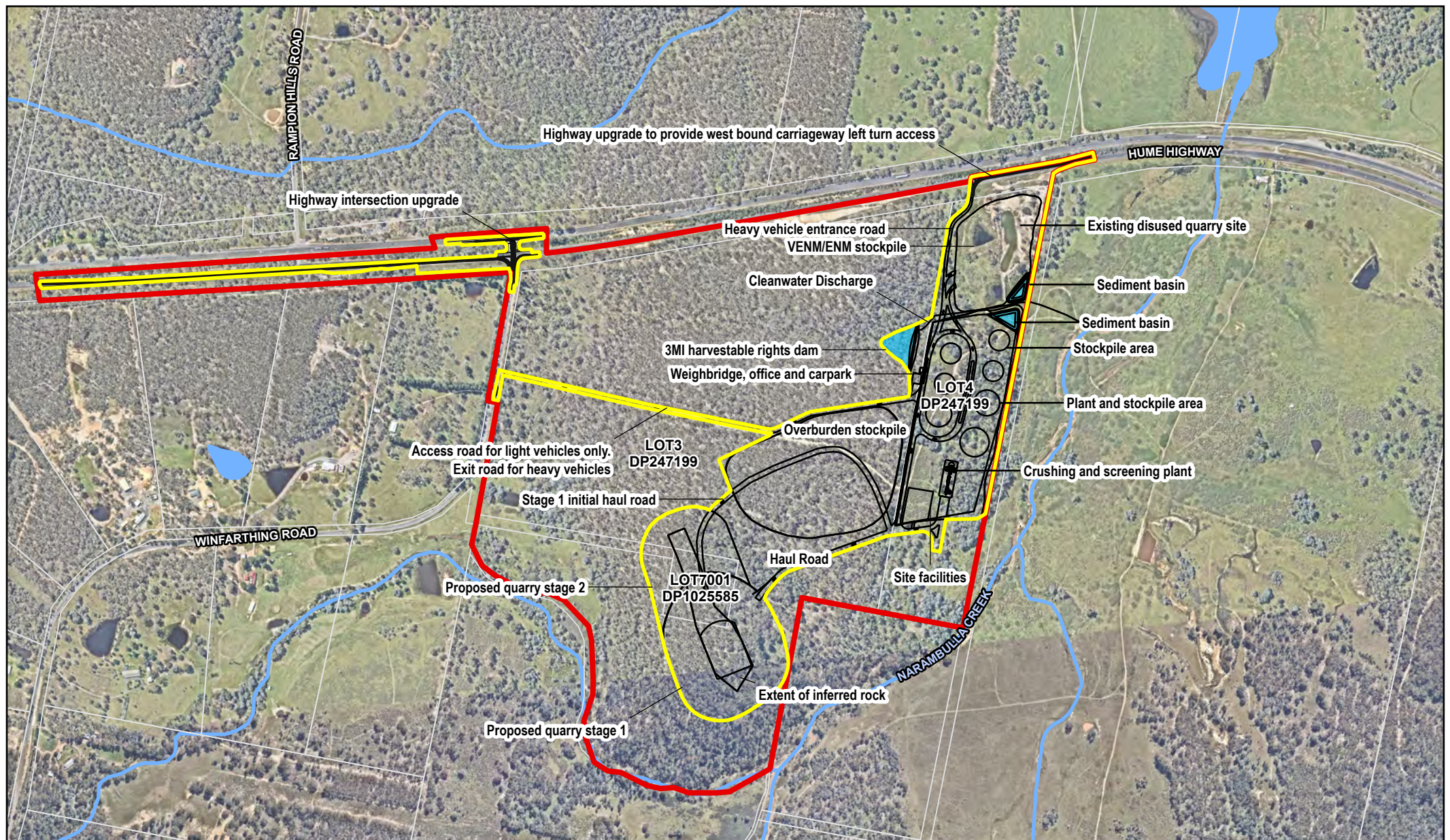


Global Quarries
Marulan quarry
ACHA

Project No. **2127708**
Revision No. **0**
Date **24/09/2024**

Regional context

FIGURE 1.1



Legend

- Project Application Area
- Disturbance Area
- Design

- Basins and water storage areas
- Waterways and waterbodies

Paper Size ISO A4
0 50 100 150 200
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Global Quarries
Marulan quarry
ACHA

Project No. 2127708
Revision No. 0
Date 30/10/2024

Site Overview

FIGURE 1.2

1.3 Authorship

This report has been prepared by GHD Heritage Advisors Linda Sonogo and Melanie Thomson as well as GHD Archaeologist Ebony Pike. Amendments relating to the revised Aboriginal community consultation and works associated with the Winfarthing Road assessment have been included by Renée Regal (Senior heritage Consultant/Director, Regal Heritage)

All field work was completed by Niche Environment and Heritage, including Dierdre Lewis-Cook (Archaeologist, Niche), Renée Regal, Stella Quest (Archaeologist, Niche), and Riley Finnerty (Archaeologist, Niche).

Aboriginal community consultation was undertaken by Linda Sonogo, Melanie Thomson and Renée Regal.

The background review was undertaken by Linda Sonogo. The archaeological reporting was undertaken by Linda Sonogo, Melanie Thomson, Ebony Pike and Renée Regal.

Technical review was provided by GHD Heritage Team Leader Asher Ford and GHD Senior Heritage Advisor Kym Oataway.

Asher Ford BA (Hons, Anthropology)

Asher Ford has more than 18 years' experience in the heritage industry, undertaking projects for a wide range of clients and industries within New South Wales, Victoria, Tasmania, South Australia and Queensland. He has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation. Asher is a full member of the Australian Association of Consulting Archaeologists.

Linda Sonogo BA (Hons Archaeology), MA (Cultural Heritage Management)

Linda Sonogo has recently submitted a PhD in Classical Archaeology at La Trobe University and has been working in the Australian archaeological consulting sector for two years. She has experience preparing Aboriginal and historical heritage assessments for a variety of project types and clients in Victoria and New South Wales.

Melanie Thomson BSc (Hons Archaeology)

Mel has recently joined GHD as a Senior Heritage Consultant and has over 18 years' experience as a heritage consultant in NSW and Victoria. She has undertaken hundreds of projects for a wide range of clients and industries. Mel has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation. Mel has been involved on a number of state significant heritage projects in the Illawarra, including mining, water and gas infrastructure and residential development.

Ebony Pike BA, MArchEvoSci (Adv)

Ebony started working in the heritage industry in 2021 and has since worked primarily within the Victorian heritage industry, but also has experience in New South Wales. Ebony has been working on a wide variety of projects since joining GHD, including in indigenous and historic archaeology, lithic analysis, and fieldwork.

Kym Oataway, BA (Hons Anthropology)

Kym has more than 12 years' experience in the heritage industry, undertaking projects for a wide range of clients and industries within NSW, Victoria and QLD. She has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation.

1.4 Scope and limitations

This report: has been prepared by GHD for Global Quarries and may only be used and relied on by Global Quarries for the purpose agreed between GHD and Global Quarries as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Global Quarries arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

2. Summary and analysis of archaeological background information

Detailed background research has been completed to understand the landscape and archaeological contexts of the Project Area and develop a predictive model for Aboriginal cultural material. A summary of this information is provided in the following section and a more detailed review and discussion is provided in the Archaeological Report (AR) in Appendix A.

2.1 Aboriginal heritage in the Project Area

An extensive search of the AHIMS with a buffer of 1000 metres was conducted on 23 August 2019 and 2 August 2024 and is located in Appendix C. This search showed there are 91 Aboriginal sites in or around the Project Area (Table 2.1). The revised search noted nine Aboriginal cultural heritage sites that's details are restricted access. Consultation with Mr David Gordon of Heritage NSW noted that none of these restricted sites fell within close proximity of the current Project Area (Appendix A).

Table 2.1 Summary of AHIMS site types found within the wider area

Site Type	AHIMS Site Feature	Number	Total percentage (%)
Isolated find	Artefact	3	4
Open Camp Site	Artefact	5	4
	Artefact	63	70
	Potential Archaeological Deposit	9	10
	Modified Tree (Carved or Scarred)	8	8
	Stone Arrangements	2	2
	Stone Quarry	1	1
Total		91	100

At the time of the initial AHIMS search there were three known Aboriginal sites currently located within the Project Area (Table 2.1; Figure 1.1) and four known Aboriginal sites within 400 metres of the Project Area. The majority of known Aboriginal sites lie to the south in proximity to Narambulla Creek (Figure 2.1). These have primarily been identified during archaeological subsurface excavations for proposed development projects. Post the current assessment works a further six Aboriginal sites were identified through survey and test excavation.

MF 1 – Winfarthing Road AHIMS #51-6-0093

This site is comprised of an isolated find that was found on a track in a disturbed context. It is located near the entrance gate on Winfarthing Road. The artefact found was a good quality quartz flake with a step termination and five negative flake scars (length 25 mm, width 24 mm, thickness 7 mm).

MF 2 – Winfarthing Road AHIMS #51-6-0095

This site is comprised of an isolated find found in an exposed area, mid-slope on a low ridge. The artefact recorded was made from crystal quartz, it had a crushed termination but no other diagnostic features.

MF 3 – Narambulla Creek AHIMS #51-6-0094

This site is a low-density artefact scatter located at the edge of a cleared pasture. There is an area next to the cleared pasture that consists of forest vegetation with significant leaf litter. The site is located mid-slope and on a minor spur above a shallow drainage line. Two artefacts were recorded at the site 18 metres apart. One quartzite flake with three negative flake scars and possible use wear; and one silcrete flake associated with core rejuvenation and five negative flake scars.

MF4 (AHIMS# 51-6-0096) is an important site which is located within 10 metres of the Project Area. This site is located on the eastern bank of the Narambulla Creek and near the south eastern corner of the Project Area. This site is a high density artefact scatter with over 100 artefacts. MF 4 – Narambulla Creek (MF4) is located in a large open area (150 metres x 30 metres) on the terraces and banks of Narambulla Creek in an area that is heavily eroded and has been previously cleared for grazing, similar to MF 3 – Narambulla Creek. The site traverses the creek and is located at the foot of ‘Shelley’ hill. Artefacts were found in the creek bed on the grassed flats (where stock had disturbed the ground) and eroding out of the creek bank. The site is likely to be much larger than the recorded site boundary but this could not be determined due to poor ground surface visibility (GSV) at the time of assessment.

The majority of the previous investigations in the area are surveys and excavations for the Lynwood Quarry, which is located approximately 6.5 kilometres to the northeast of the Project Area. Three further studies were undertaken for the development of a mushroom substrate facility that included the current quarry Project Area. Previous archaeological studies suggest that large artefact scatters are more likely to be found near and along the main Riverine corridors. Low density scatters and isolated finds are more likely to be found along minor and less reliable water sources.

These studies have also demonstrated that Aboriginal sites are found across a range of landscapes, from spurs, river/creek flats, hilltops and ridges although usually when these landscapes are in close proximity to water. Many of the sites are isolated finds and low-density scatters. This suggests that they may be transient sites used by Aboriginal people as they moved through the area. This has led to the conclusion that many of the sites are of low archaeological significance. Additionally, a number of these sites were found due to heavy erosion and were found in disturbed contexts.

The current Project Area remains largely undisturbed other than agricultural grazing activities. The rocky rises and Narambulla Creek are considered to be of moderate to high potential to contain Aboriginal archaeological places based on the existing Aboriginal sites along the creek and the vantage for the high points in the west of the Project Area, in both a surface and subsurface context.

Detailed information regarding Aboriginal sites, previous investigations and the predictive modelling for the Project Area is provided within the AR in Appendix A.

2.2 Environmental context

The Project Area is located in the Southeastern Highlands but close to the border of the Sydney Basin. It lies on the Lachlan Fold belt between the Towrang and Yarralaw Faults, just west of the Yarralaw Fault (Thomas, et al., 2013). The area was formed through the deposition of fine sediment that is now shales, sandstone and volcanic sediments found in series of parallel troughs eg. Tumut, Hill End and from Captain's Flat to Goulburn during the Devonian period when the area was covered by seawater. The landforms found in the wider area are typically hills, crests, slopes saddles and spurs. Main features of the bioregion are plateau remnants, granite basins with prominent ridges.

The Project Area abuts Narambulla Creek along its eastern border. Narambulla Creek is a third order stream which flows into the Wollondilly River. The landforms around the Project Area comprises of rolling low hills and hills with fixed, shallow erosional stream channels. The disturbed terrain has undergone significant alteration to the extent that archaeological material is unlikely to be present, as a result of identified activities such as quarrying.

Detailed information regarding the geology and soil of the Project Area is provided in the AR in Appendix A.

2.3 Ethnographic accounts of Aboriginal people

The Project Area is located on the general border of the Gundungarra (or Gandangara) and Ngunawal people. It is traditionally believed that the Gundungarra occupied lands to the north of Goulburn while the Ngunawal occupied lands to the south. Other groups in the area included the Wandandian people, who occupied the area east of the Great Dividing Range (Higginbotham, Kass, & Jackson-Stepowski, 2009). All three clans had similar languages and it is commonly thought that the Gundungarra and Ngunawal languages were originally part of the same language group but separated at a later unknown time (Barrett, 2015).

The Ngunawal and Gundungarra, were allies and along with other groups (Wiradjuri, Walgalu, Ngario, Yuin, and Jaitmatang) came together to socialise, organise marriages, make laws, conduct ceremonies and to trade (ACT Natural Resource Management Council). They would make an annual trek to Tidbinbilla and used to meet in the Blue Mountains in the warmer months to gather Bogong moths (Massola, 1969) that flocked to the area looking for a retreat from the heat to use as a high protein food source.

3. Consultation with the Aboriginal Community

In accordance with Part 6 of the NSW *National Parks and Wildlife Act 1974*, proponents must consult with Aboriginal people regarding the Aboriginal cultural values and the cultural significance of any objects, features or places that may be present in the Project Area.

Although state significant development that is authorised by a development consent granted under Division 4.7 of the EP&A Act is exempt from requiring an Aboriginal Heritage Impact Permit (AHIP).

Consultation for this project has been undertaken according to the following guidelines and legislative requirements:

- *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005)
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCR) (DECCW, 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010)
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010)
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011)
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (ICOMOS, 2013a)
- *NSW National Parks and Wildlife Regulation, 2009* (National Parks and Wildlife Service, 2009).

The NPW Act was established to protect Aboriginal objects and places through the approval of Aboriginal Heritage Impact Permits (AHIPs). As part of this process, effective consultation with Aboriginal people is necessary. The objectives for consultation is to ensure that Aboriginal groups have the opportunity to be involved in the management of Indigenous cultural heritage found within their country.

The objectives outlined by DECCW are:

- *Providing relevant information about the cultural significance and values of the Aboriginal object(s) and/or place(s)*
- *Influencing the design of the method to assess cultural and scientific significance of Aboriginal object(s) and/or place(s)*
- *Actively contributing to the development of cultural heritage management options and recommendations for any Aboriginal object(s) and/or place(s) within the proposed project area*
- *Commenting on draft assessment reports before they are submitted by the proponent to OEH.*

As a guide to proponents preparing an AHIP, DECCW have outlined four stages of consultation in the Aboriginal cultural heritage consultation requirements for proponents 2010. The four stages outline are:

- Stage 1 – Notification of project proposal and registration of interest
- Stage 2 – Presentation of information about the proposed project
- Stage 3 – Gathering information about cultural significance
- Stage 4 – Review of draft cultural heritage assessment report.

These guidelines outlined by DECCW have been followed in the preparation of this report.

Due to the reissue of SEARs this assessment has had two Stage 1, 2 and 3 periods. Details of both have been highlighted below.

3.1 Stage 1 Consultation: notification and registration

The initial Stage 1 consultation was first initiated in June 2019 the second notification was made on 3 July 2024. GHD contacted the relevant Aboriginal and governmental bodies seeking to identify Aboriginal organisations and persons who may hold cultural knowledge of Aboriginal objects and/or Aboriginal places within the proposed works area.

The organisations contacted for assistance in identifying Aboriginal people and groups with cultural knowledge of the area were as follows:

- Goulburn Mulwaree Council
- Local Land Services: Southeast Region
- Native Title Services Corporation
- Office of the Registrar: Aboriginal Land Rights Act 1983 (NSW)
- Pejar Local Aboriginal Land Council
- The Office of Environment and Heritage (now Heritage NSW)
- National Native Title Tribunal.

An advertisement was also placed on 5 and 12 June 2019 and the 17 July 2024 requesting any interested Aboriginal groups to register their interest in the project for consultation. A copy of the proof can be found in Appendix A.

Based on the information provided by the above organisations, a list of 103 Aboriginal people and groups were identified as having potential interest in the Marulan Quarry Project and cultural knowledge of the area.

Letters of notification were sent out in August 2019 and 3 August 2024 in accordance with Section 4.1.2. of the ACHCRs, to all Aboriginal groups and individuals that were identified as having possible interest in the Marulan Quarry Project and who may be cultural knowledge holders concerning the significance of Aboriginal values in the Project Area.

All RAPs from the previous consultation process were registered again as part of this revised process In response to this notification, the following organisations and individuals responded and registered their interest in the Marulan Quarry Project:

Table 3.1 *List of Indigenous groups and individuals registered for consultation in 2019*

Indigenous Group	Contact Name
Badu	Karia Bond
Bianmanga	Janaya Smith
Bidawal	Maria Stewart
Bilinga	Simalene Carriage
Birrungal	Mary Davidson
Boonunga	Paul Caple
Bullawaya	Fay Campbell
Bulling Gang	Whane Carberry
Buru Ngunawal Aboriginal Corporation	Wally Bell / Jay Warren Daley and Warren Daley
Corroboree Aboriginal Corporatio	Marilyn Carool-Johnson
Cullendulla	Corey Smith
Curwur Murre	Donald Parsons
Dharug	Wally Caines
Didge-Ngunawal	Lilly Carrol
Djanaba Gaxabara	Ben Walker

Indigenous Group	Contact Name
Djiringanj	John Walker
Elouera	James Sutton
Eora	Kahu Brennan
Gadung	Kathy Burns
Gangangarra	Kim Carriage
Golangaya	Adreian Connelly
Goobah	Basil Smith
Gulgunya Ngunawal Heritage Aboriginal Consultancy	Glen Freeman
Gulla Gunar	Clayton Moore
Gundungurra	Trish Levett
Gundungurra Aboriginal Heritage Association Incorporated (GAHAI)	Sharyn Halls
Gunyu	Mundarra Drew
Jason Davison	Jason Davison
Kalthi Consultancy	Derek Hardman
Kuringgai	Toni Brierley
Minnamunnung	Aaron Michael Broad
Mulwaree Aboriginal Community Inc.	Jennie Gordon
Mundawari Heritage Consultants	Dean Delponte
Munyunga	Jason Bell
Muragadi	Jesse Carroll-Johnson / Shaun Carroll
Murra Bidgee Mullangari	Ryan Johnson
Murramarang	Roxanne Smith
Murrin	Tarlarra Te Kowhai
Murrindiyarr Aboriginal Corporation	Teena Riley
Murrindiyarr Aboriginal Corporation	Kazan Brown
Murrumbul	Shane Saunders
Ngarigo	David Pittman
Ngoonawal	Tyronne Bell
Ngunawal	Janine Thompson
Ngunawal	Edward Stewart
Ngunawal Consultancy	Peiro Delponte
Ngunawal Heritage Aboriginal Corporation	Graeme Dobson
Nundagurri	Thomas Tighe
Pejar Local Aboriginal Land Council	Delise Freeman
Sonione Wakabut Rogers	Sonione Wakabut Rogers
Tharawal	John Stewart
Thauaira	Shane Davis
Thoorga	John Carriage
Walbunja Elders	Dean Scott
Walgalu	Ronald Stewart

Indigenous Group	Contact Name
Wandandian	William Bond
Wimbalaya	Ekarla Campbell
Wingikara	Izahya Clay
Wirambie	Vivian Carriage
Yaxa Burra	Kevin Stewart-Campbell
Yerramurra	Nathan Walker-Davis
Guntawang Aboriginal Resources Incorporated	Wendy Morgan

Table 3.2 *List of Indigenous groups and individuals registered for consultation in 2024*

Indigenous Group	Contact Name
Badu	Karia Bond
Bianmanga	Janaya Smith
Bidawal	Maria Stewart
Bilinga	Simalene Carriage
Birrungal	Mary Davidson
Boonunga	Paul Caple
Bullawaya	Fay Campbell
Bulling Gang	Whane Carberry
Buru Ngunawal Aboriginal Corporation	Wally Bell / Jay Warren Daley and Warren Daley
Corroboree Aboriginal Corporation	Marilyn Carrooll-Johnson
Cullendulla	Corey Smith
Curwur Murre	Donald Parsons
Dharug	Wally Caines
Didge-Ngunawal	Lilly Carrol
Djanaba Gaxabara	Ben Walker
Djiringanj	John Walker
Elouera	James Sutton
Eora	Kahu Brennan
Gadung	Kathy Burns
Gangangarra	Kim Carriage
Golangaya	Adreian Connelly
Goobah	Basil Smith
Gulgunya Ngunawal Heritage Aboriginal Consultancy	Glen Freeman
Gulla Gunar	Clayton Moore
Gundungurra	Trish Levett
Gundungurra Aboriginal Heritage Association Incorporated (GAHAI)	Sharyn Halls
Gunyu	Mundarra Drew
Jason Davison	Jason Davison
Kalthi Consultancy	Derek Hardman
Kuringgai	Toni Brierley

Indigenous Group	Contact Name
Minnamunnung	Aaron Michael Broad
Mulwaree Aboriginal Community Inc.	Jennie Gordon
Mundawari Heritage Consultants	Dean Delponte
Munyunga	Jason Bell
Muragadi	Jesse Carroll-Johnson / Shaun Carroll
Murra Bidgee Mullangari	Ryan Johnson
Murramarang	Roxanne Smith
Murrin	Tarlarra Te Kowhai
Murrindiyarr Aboriginal Corporation	Teena Riley
Murrindiyarr Aboriginal Corporation	Kazan Brown
Murrumbul	Shane Saunders
Ngarigo	David Pittman
Ngoonawal	Tyronne Bell
Ngunawal	Janine Thompson
Ngunawal	Edward Stewart
Ngunawal Consultancy	Peiro Delponte
Ngunawal Heritage Aboriginal Corporation	Graeme Dobson
Nundagurri	Thomas Tighe
Pejar Local Aboriginal Land Council	Delise Freeman
Sonione Wakabut Rogers	Sonione Wakabut Rogers
Tharawal	John Stewart
Thauaira	Shane Davis
Thoorga	John Carriage
Walbunja Elders	Dean Scott
Walgalu	Ronald Stewart
Wandandian	William Bond
Wimbalaya	Ekarla Campbell
Wingikara	Izahya Clay
Wirambie	Vivian Carriage
Yaxa Burra	Kevin Stewart-Campbell
Yerramurra	Nathan Walker-Davis
Guntawang Aboriginal Resources Incorporated	Wendy Morgan

A consultation log detailing all consultation with Aboriginal individuals and groups concerning the project is provided in D.

3.2 Stage 2 and 3 Consultation: presentation of the project and gathering information regarding cultural significance

3.2.1 Presented methodology

The presentation of project information and project methodology was presented in a single document to all RAPs (Appendix B). This document provided a summary of:

- The proposed project description describing the location and extent, including a detailed map
- Environmental and archaeological background information of existing Aboriginal cultural heritage values and places, including a detailed map
- Specific request for cultural knowledge and values associated with the Project Area
- A proposed methodology for archaeological survey and indicative subsurface excavations proposed within the Project Area.

RAPs were invited to comment and provide feedback on the proposed methodology and any comments would be incorporated into the final report.

The initial consultation proposed methodology was provided to all RAPs for comment on the 03 March 2021, with any feedback or comments to be provided within 28 days. An updated methodology was provided on 10 May 2021 to inform RAPs of minor changes in the proposed design and layout of proposed activities within the Project Area. The archaeological method remained unchanged.

For the revised consultation period the draft methodology was provided to all RAPs on 9 August 2024 with any feedback or comments to be provided on 6 September 2024. Confidential feedback was received from Dean Delponte on the 12 August 2024 and incorporated into the revised methodology. Guntawang Aboriginal Resources Inc responded on the 12 August 2024 and requested additional information on native plant removal, replanting and naming of the new truck turning bay. Responses were provided to Guntawang Aboriginal Resources Inc on the 13 August 2024 and feedback was incorporated into the updated methodology.

Murrindyaar Aboriginal Corporation responded on the 30 August 2024 to request that archaeological assessment be extend to the entirety of the proposed works area, not just the Humer Highway upgrade areas. A response was provided on the 3 September 2024 that it was not the intent of the next round of fieldwork to revisit sections of the proposed works area that had been assessed.

An updated methodology which included RAP comments and feedback was provided on 10 September 2024. The draft and finalised methodologies have been included Appendix A of this document.

3.2.2 Aboriginal cultural heritage survey

RAPs who provided specific feedback regarding cultural values and knowledge of the Project Area were invited to participate during the ground surveys, particularly those who expressed interest in participating in the field work.

A formal invitation for engagement form was provided that included appropriate insurances, fitness for work and personal protective equipment. This was outlined in a two-page form that was required to be completed, signed and returned prior to the commencement of field work.

A number of organisations and individual RAPs that were interested in participation in field work, as detailed in the Consultation Log in Appendix D.

Individuals from RAPs were invited to participate in all field work components that could provide relevant insurances and had experience and cultural knowledge of the Project Area, therefore some individuals who were interested in participating were unable to be involved in any field work.

Based on conversations with RAPs, field participants were rotated over two days to accommodate individuals. Representatives from the following RAPs were engaged to participate during the field surveys:

- Corroboree Aboriginal Corporation

- Mulwaree Aboriginal Community Inc.
- Murra Bidgee Mullangari
- PLALC
- Thoorga Nura
- Thunderstone Aboriginal Cultural Services
- Walbunja
- Yurwang Gundana Cultural Heritage Services

The field surveys were completed on the 7 and 8 of December 2021. This would include the broader Project Area not just the proposed areas of impacts associated with the quarry, stockpiles and access tracks, as the layout of these component of work may be altered or moved. Wet weather hindered the survey efforts although there were not access issues across the Project Area. Table 3.3 lists individuals who participated during the field surveys.

Table 3.3 *Field survey representatives*

Representative	Registered Aboriginal Party
Merekai Bell	Yurwang Gundana Cultural Heritage Services
Tyronne Bell	Thunderstone Aboriginal Cultural Services
Jennie Gordon	Mulwaree Aboriginal Community Inc.

For the additional survey of Winfarthing Road and the Hume Highway Chris McAlister and Ashley Croker, PLALC attended the assessment on 11 September 2024.

Conversations in the field were conducted with regard to areas of archaeological potential and extent of previous disturbances with RAP representatives, as a number of participants were aware of previous works and assessments along large sections of the Project Area. Previously noted information regarding the proximity of a massacre on Narambulla Creek, which was confirmed by Jennie Gordon as not in proximity to the current Project Area (Jennie Gordon pers. comm.). It was agreed that archaeological test excavations would focus on areas of archaeological potential where proposed works are proposed and in landforms to determine the extent, nature and significance of Aboriginal cultural material close to Narambulla Creek.

3.2.3 Archaeological test excavations

Individuals from RAP groups were again invited to participate during the test excavations that had provided relevant insurances and had experience and cultural knowledge of the Project Area. Based on conversations with all RAPs, field participants were rotated over the six days to accommodate individuals. Representatives from the following RAPs were engaged to participate in the field surveys:

- Corroboree Aboriginal Corporation
- Mulwaree Aboriginal Community Inc.
- Murra Bidgee Mullangari
- PLALC
- Thoorga Nura
- Thunderstone Aboriginal Cultural Services
- Walbunja
- Yurwang Gundana Cultural Heritage Services.

The archaeological test excavations were completed on 28 February 2020, 1 March 2022 and 14 to 18 March 2022. Locations for excavation focused on areas of archaeological potential that were identified during the field survey and areas of excavation proposed in the methodology document provided to all RAPs in late 2021. Excavations were therefore completed in areas of proposed works within identified areas of archaeological potential (Table 3.4).

Table 3.4 Archaeological test excavation representatives

Representative	Registered Aboriginal Party
Merekai Bell, Tim Stabbs	Yurwang Gundana Cultural Heritage Services
Tyronne Bell, Bron Ireland-Bell, Nicole Ireland-Vuacera	Thunderstone Aboriginal Cultural Services
Hika Teowhai	Walbunja
Steve Johnson, Todd Pintaric	Corroboree Aboriginal Corporation
Aryssa McAlister	Pejar Local Aboriginal Land Council
John Carriage	Thoorga Nura
Brendan Taylor	Murra Bidgee Mullangari

Archaeological investigations were completed across areas of archaeological potential and in areas of high impact associated with the construction of the quarry extraction location.

3.3 Stage 4 consultation: review of the draft ACHA report

RAPs for the project were provided a hard copy and an electronic copy of the DRAFT ACHA report for their review on the 24 October 2024.

Didge Ngunnawal, Guntawang Aboriginal Resources Inc responded on the 10 October 2024 that they had no further comments on the DRAFT ACHA. Comments on the report were received from Mulwaree Aboriginal Community on the 18 October 2024 requesting that all previous information provided during the 2021 assessment completed by Niche be included in this current assessment. This report was revised as requested. Didge Ngunnawal Corporation responded on the 19 October 2024 that they had no further comments on the DRAFT ACHA.

A copy of the final ACHA report will be made available by the Department of Planning and Environment to all RAPs during the public exhibition period for the Marulan Quarry Environmental Impact Statement. During this exhibition period all RAPs will have the opportunity to review and provide additional comment on the final ACHA report as well as other specialist reports included as part of the EIS (i.e. Ecology).

4. Aboriginal cultural significance assessment

4.1 Aboriginal Cultural Heritage

There are three Aboriginal sites currently situated within the Project Area. These have been registered as MF 1 Winfarthing Road (51-6-0093), MF 2 – Winfarthing Road (51-6-0095), and MF 3 – Narambulla Creek (51-6-0094).

Seven new Aboriginal sites were registered: Narambulla Creek ASF1 (51-6-0918), Narambulla Creek ASF2 (51-6-0919), Narambulla Creek ASF3 (51-6-0920), Narambulla Creek ASF4 (51-6-0921), Narambulla IA1 (51-6-0926), Narambulla IA2 (51-6-0916), and Narambulla IA3 (51-6-0917) with limited site extents. Registered Aboriginal sites MF1 (51-6-0093) and MF2 (51-6-0095) were updated to reflect the identification of additional cultural material.

4.2 Significance Assessment

The Australia ICOMOS Burra Charter defines the principles and procedures for the conservation and management for items of cultural significance within Australia (Australia International Council of Monuments and Sites (ICOMOS), 2013). The Burra Charter is the industry standard when providing advice and recommendations on places or objects of cultural heritage significance. Cultural significance is used in Australian heritage practice to include all of the cultural values and meanings that may be ascribed to a place (Australian ICOMOS, 2013).

The Burra Charter defines cultural significance as follows:

“Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups (ICOMOS 2013).”

The determination of cultural heritage significance is based on the five aspects of cultural significance as summarised Table 4.1 below. In relation to each of the criteria, the significance of the Project Area will be ranked as high, moderate or low under each statement of significance.

Table 4.1 Cultural significance definitions for determining cultural significance (values) (ICOMOS, 2013b)

Significance Aspect	Definitions	Assessment
Aesthetic significance	<i>Aesthetic value refers to the sensory and perceptual experience of a place—that is, how we respond to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings, and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals. Expressions of aesthetics are culturally influenced.</i>	<i>In considering aesthetic value, ask:</i> – Does the place have special compositional or uncommonly attractive qualities involving combinations of colour, textures, spaces, massing, detail, movement, unity, sounds, scents? – Is the place distinctive within the setting or a prominent visual landmark? – Does the place have qualities which are inspirational or which evoke strong feelings or special meanings? – Is the place symbolic for its aesthetic qualities: for example, does it inspire artistic or cultural response, is it represented in art, photography, literature, folk art, folk lore, mythology or other imagery or cultural arts? – Does the place display particular aesthetic characteristics of an identified style or fashion? – Does the place show a high degree of creative or technical achievement? (ICOMOS, 2013b, p. 3)

Significance Aspect	Definitions	Assessment
Historic significance	<i>Historic value is intended to encompass all aspects of history—for example, the history of aesthetics, art and architecture, science, spirituality, and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, an historic event, phase, movement or activity, person, or group of people. It may be the site of an important event. For any place the significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence.</i>	To help understand the historic value of a place, ask: – Is the place associated with an important event or theme in history? – Is the place important in showing patterns in the development of history locally, in a region, or on a state-wide, or national or global basis? – Does the place show a high degree of creative or technical achievement for a particular period? – Is the place associated with a particular person or cultural group important in the history of the local area, state, nationally or globally? (ibid, p.3)
Scientific significance	<i>Scientific value refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions. To establish potential, it may be necessary to carry out some form of testing or sampling. For example in the case of an archaeological site, this could be established by a test excavation.</i>	To appreciate scientific value, ask: – Would further investigation of the place have the potential to reveal substantial new information and new understandings about people, places, processes or practices which are not available from other sources? (ibid, p.3)
Social significance	<i>Social value refers to the associations that a place has for a particular community or cultural group and the social or cultural meanings that it holds for them.</i>	To understand social value, ask: – Is the place important as a local marker or symbol? – Is the place important as part of community identity or the identity of a particular cultural group? – Is the place important to a community or cultural group because of associations and meanings developed from long use and association (ibid, p.3)?

Significance Aspect	Definitions	Assessment
Spiritual significance	<i>Spiritual value refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art, and practices of a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places.</i> <i>The qualities of the place may inspire a strong and/or spontaneous emotional or metaphysical response in people, expanding their understanding of their place, purpose, and obligations in the world, particularly in relation to the spiritual realm.</i> <i>The term spiritual value was recognised as a separate value in the Burra Charter, 1999. It is still included in the definition of social value in the Commonwealth and most state jurisdictions. Spiritual values may be interdependent on the social values and physical properties of a place.</i>	<i>In order to help appreciate the spiritual value of a cultural heritage place, the ICOMOS Practice Note documents:</i> <i>– Does the place contribute to the spiritual identity or belief system of a cultural group?</i> <i>– Is the place a repository of knowledge, traditional art or lore related to spiritual practice of a cultural group?</i> <i>– Is the place important in maintaining the spiritual health and wellbeing of a culture or group?</i> <i>– Do the physical attributes of the place play a role in recalling or awakening an understanding of an individual or a group's relationship with the spiritual realm?</i> <i>– Do the spiritual values of the place find expression in cultural practices or human-made structures, or inspire creative works? (ibid, p.3)</i>

The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) also provides guidelines for assessment of significance with reference to the Burra Charter (Australia ICOMOS 2013). It provides guidance on identification of the cultural/social significance of Aboriginal objects and/or places to Aboriginal people and the identification of the scientific (archaeological) significance to the scientific/research community.

The assessment of scientific (archaeological) significance is largely guided by the Aboriginal Cultural Heritage Standards and Guidelines Kit (DEC 1997) using the following criteria:

- **Research potential:** does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- **Representativeness:** how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- **Rarity:** is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practiced? Is it in danger of being lost or of exceptional interest?
- **Education potential:** does the subject area contain teaching sites or sites that might have teaching potential?

In relation to each of the criteria above, the significance of Aboriginal objects or places within the Project Area will be ranked as high, moderate or low (Table 4.2).

Table 4.2 Cultural significance definitions for determining scientific significance (values) (ICOMOS, 2013b)

Level of significance	
Low	<i>The site or object contains only a single or limited number of features, and has no potential to meaningfully inform our understanding of the past beyond what it contributes through its current recording (i.e. no or low research potential). The site or object is a representative but unexceptional example of the most common class of sites or objects in the region. Many more similar examples can be confidently predicted to occur within the Project Area, and in the region.</i>
Moderate	<i>The site or object derives value because it contains features, both archaeological and contextual, which through further investigation may contribute to our understanding of the local past. These features include, but are not limited to: the relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a relatively large assemblage of stone artefacts. The presence of a diverse artefact and feature assemblage, and connectedness with landscape features and other notable sites provide relatively higher representative and rarity values than sites of low significance.</i>

Level of significance	
High	<i>The site or object has value because it contains archaeological and/or contextual features which through further investigation may significantly contribute to our understanding of the past, both locally and on a regional scale. These features include, but are not limited to: Aboriginal ancestral remains; the site's relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a very large assemblage of stone artefacts associated with other features such as oven remains or shell midden. Such sites will be relatively rare, and will be representative of a limited number of similar sites that make up this class; hence they derive high representative and rarity values.</i>

4.3 Statement of Significance

The Aboriginal sites within the Project Area are largely considered to be low in aesthetic, historic, scientific, and social significance. The exception to this is at Narambulla Creek AFS3 (AHIMS #51-6-0920), which has a low-moderate scientific (archaeological) significance. This significance was assigned due to the rarity of finding large assemblages within the geographic region that is present at this Aboriginal site. The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community. No components relating the spiritual significance for these Aboriginal sites were identified during the test excavations. As such, the spiritual value of each of the Aboriginal sites is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

The statement of significant for each Aboriginal site within the Project Area has been summarised in Table 4.3. These are further detailed in Section 9 of the Archaeological Report in Appendix C.

Table 4.3 Significance Assessment for Aboriginal sites associated with the Project Area

AHIMS	Site Name	Site Type	Significance				
			Aesthetic	Historic	Scientific (archaeological)	Social	Spiritual
51-6-0093	MF1	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0094	MF3	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0095	MF2	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0918	Narambulla Creek ASF1	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0919	Narambulla Creek AFS2	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0920	Narambulla Creek AFS3	Artefact Scatter	Low	None	Low-Moderate	Low	Low (TBC)
51-6-0921	Narambulla Creek AFS4	Artefact Scatter	Low	None	Low	Low	Low (TBC)
51-6-0926	Narambulla IA1	Isolated Artefact	Low	None	Low	Low	Low (TBC)
51-6-0916	Narambulla IA2	Isolated Artefact	Low	None	Low	Low	Low (TBC)
51-6-0917	Narambulla IA3	Isolated Artefact	Low	None	Low	Low	Low (TBC)

5. Impact Assessment

5.1 Summary of Impacts

The proposed works associated with the Marulan Quarry include the extraction of up to 500,000 tonnes per year of hard rock, the establishment of primary processing facilities, a haul route from an existing forestry haul road, and site rehabilitation through the emplacement of virgin excavated natural material, excavated natural material and other clean fill.

Ground disturbing works associated with the quarry are currently proposed to be associated along the eastern border of the Project Area, with the quarry situated over Shelley's Hill. These works will result in the disturbance and removal of soils throughout the quarry footprint and at the sites of associated works.

The proposed works would result in direct impacts to sites: Narambulla AFS1 (51-6-0918), Narambulla AFS2 (51-6-0919), Narambulla AFS3 (51-6-0920), Narambulla IA2 (51-6-0916), and Narambulla IA3 (51-6-0917).

The location of the Aboriginal sites and the landforms in which they are situated cannot be avoided by the current proposed quarry ground disturbing works. Works across the landform can be limited to within a works zone to minimise potential harm to unrecovered Aboriginal cultural material that may occur in the broader landform feature.

5.1.1 Avoidance of Harm

The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEHS 2011)* requires that both direct and indirect harm be considered. Direct harm refers to instances where an activity physically impacts a known site or object, directly affecting the heritage values attributed to that site or object. Indirect harm refers to harm associated with ancillary impacts of the activity and may affect sites or objects as a result of this activity. Examples of such indirect harm are pedestrian movement across a site to allow access.

The proposed activities associated with the development of Marulan Quarry has the potential to harm Aboriginal objects through the disturbance of topsoils for the proposed quarry and associated infrastructure.

5.2 Management and Mitigation Measures

Heritage management ideally consists of the conservation of sites through the preservation and conservation of the context of the site. In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, and the retrieval of information through excavation or collection and interpretation.

Avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy and should be implemented where practical. Impacts to Aboriginal sites are likely to occur due to their locations largely within the current proposed design footprint.

Artefact scatters Narambulla AFS1 (51-6-0918), Narambulla AFS2 (51-6-0919), and Narambulla AFS3 (51-6-0920) are situated within alluvial-colluvial soils. Testing of the hill crest and lower hill slope where Narambulla AFS1 and Narambulla ASF2 are located, respectively, confirmed that the area contains artefacts in small densities that are common to the wider region and are considered to have low scientific significance. Due to the higher number of artefacts recovered from Narambulla AFS3 its significance is assessed as low-moderate in conjunction with being considered to be a common site type in the region.

Isolated artefacts Narambulla IA2 (51-6-0916) and Narambulla IA3 (51-6-0917) were identified within shallow lithosols and podzolic soils. Further testing the areas in proximity to these sites did not identify any additional artefacts, and as a result, their significance is assessed as low.

Management recommendations for the impact of Aboriginal sites within the proposed works and the associated landforms are detailed in the following section.

6. Recommendations

The following recommendations are based in consideration of the statutory requirements under the *National Parks and Wildlife Act 1974*, as well as the recommendations of previous assessments within the Project Area, the interests of the Aboriginal stakeholder groups, and the likely impacts of the proposed development.

6.1.1 Recommendation 1: Development of an Aboriginal Cultural Heritage Management Plan

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared before commencement of ground disturbing works that have the potential to impact the surface. The ACHMP should be reviewed and endorsed by DPE – Environment and Heritage.

The ACHMP will address project impacts and will provide details on:

- Aboriginal sites identified for the project
- The surface collection and subsurface salvage of areas where there will be direct impact to cultural material
- Management measure and their progress towards completion
- Continuing consultation and the involvement of RAPs
- Cultural Awareness Inductions for all contractor staff
- Protocols for Aboriginal cultural material finds
- Protocols for suspected human skeletal remains
- Provision for review and updates of the ACHMP.

6.1.2 Recommendation 2: Naming of Project Infrastructure

It has been recommended by the RAPs of the project that through consultation with local Aboriginal community members (where appropriate) the proponent uses locally accepted First Nations language words for the naming of Project infrastructure.

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Appendix A

Proof of Advertisement

Appendix B

Consultation Methodology

Appendix C

Archaeological Report



Marulan Quarry EIS

Archaeological Report

Global Quarries Australia Pty Ltd

31 October 2024

REGULATOR DOCUMENT



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Project name	Marulan Quarry EIS
Document title	Marulan Quarry EIS Archaeological Report
Revision version	FINAL
Project number	2127708

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
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S3	B	E. Pike, L. Sonegeo, and M. Thomson	K. Oataway and K. Rosen				
S3	C	E. Pike, L. Sonegeo, M. Thomson and Renée Regal	K Rosen				24/09/2024
	FINAL	E. Pike, L. Sonegeo, M. Thomson and Renée Regal					31/10/2024
	FINAL	E. Pike, L. Sonegeo, M. Thomson and Renée Regal	A Ford				21/05/2025

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Executive summary

Global Quarries Australia Pty Ltd (Global Quarries) proposes to develop a quarry for hard rock extraction to the west of Marulan, New South Wales. The quarrying activities are proposed to take place over a period of 18 years to supply the Sydney and regional markets with high grade cement feedstock. The proposed works include auxiliary infrastructure to facilitate quarrying activities at the site and a new site access to the Hume Highway.

GHD have been engaged by Global Quarries to undertake Aboriginal archaeological and cultural heritage assessment for the project. The Aboriginal Cultural Heritage Assessment has been undertaken in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECC 2010).

A number of previous archaeological studies have been completed within and close to the current Project Area, providing a good understanding of the archaeological landscape in the surrounding region. A stone arrangement has been found around the Lynwood Quarry region that suggests that the area was associated with ceremonial and longer-term use by Aboriginal people and holds significant cultural value. Areas of highest archaeological potential have been identified in close proximity to water, and have been identified across a variety of landscapes, including spurs, river/creek flats, hilltops, and ridges.

The archaeological field survey was conducted over two programs. The first program was completed on 7 and 8 December 2021. The field survey team consisted of Dierdre Lewis-Cook (Archaeologist, Niche Environment and Heritage), Riley Finnerty (Archaeologist, Niche Environment and Heritage), Tyronne Bell (Registered Aboriginal Party, Thunderstone Aboriginal Cultural Services), and Merekai Bell (Registered Aboriginal Party, Yurwang Gundana Cultural Heritage Services). This program assessment was completed within Lots 3 and 4 of DP 247199. The second program was completed on 11 September 2024. The field survey team comprised of Renée Regal (Senior Heritage Consultant/ Director Regal Heritage [PJLALC]), Chris McAllister and Ashley Croker (Registered Aboriginal Party, Pejar Local Aboriginal Land Council). This programs assessment was completed of the proposed intersection works at the corner of Winfarthing Road and the Hume Highway. The entirety of the Project Area was accessible to the survey team.

Ground surface visibility (GSV) was low throughout the Project Area, although there were areas of archaeological potential were identified in association with hill slopes, ridges, and proximity to drainage features. Previous ground disturbance was noted within the Project Area, consisting of underground utilities installation, vehicular access tracks, and bioturbation. There was some evidence within the Project Area of the stockpiling of sandbags, quarrying, and tree logging.

Based on the findings of the field survey and the previously devised methodology completed in consultation with all Registered Aboriginal Parties (RAPs), test excavations were completed within areas of archaeological potential where disturbance was minimal. Test excavations were undertaken over seven days between 28 February and 18 March 2022. The field excavation team consisted of Carly Todhunter (Archaeologist, Niche Environment and Heritage), James McGuinness (Archaeologist, Niche Environment and Heritage), Vergilio Serra (Global Quarries), Aryssa McAlister (RAP, PLALC), John Carriage (RAP, Thoorga Nura), Bron Ireland-Bell (RAP, Thunderstone Aboriginal Cultural Services), Nicole Ireland-Vuacera (RAP, Thunderstone Aboriginal Cultural Services), Tyronne Bell (RAP, Thunderstone Aboriginal Cultural Services), Merekai Bell (RAP, Yurwang Gundana Cultural Heritage Services), Tim Stabbs (RAP, Yurwang Gundana Cultural Heritage Services), Steve Johnson (RAP, Corroboree Aboriginal Corporation), Todd Pintaric (RAP, Corroboree Aboriginal Corporation), Brenden Taylor (RAP, Murra Bidgee Mullangari) and Hika Tekowhai (Walbunja). Areas of archaeological potential on the crest of Shelley's Hill and in proximity to Narambulla Creek were targeted by the excavation program. Areas of low potential on the plain were not targeted given that these areas are unlikely to yield any Aboriginal cultural material.

A total of three 1 x 1 metre test pits and 46, 0.5 x 0.5 metre test pits were excavated across two areas of previously identified archaeological potential. Other areas of potential identified during the survey were not subject to testing as these areas were determined to have low archaeological potential. A total of 40 stone artefacts were recovered from 18 test pits, with 16 of the artefacts recovered from the lower slopes of Shelley Hill and 24 of the artefacts recovered within proximity to Narambulla Creek. Given the existing slope, it is unlikely that these artefacts remain in situ and have most likely washed down slope. Seven new Aboriginal sites were registered: Narambulla Creek ASF1 (51-6-0918), Narambulla Creek ASF2 (51-6-0919), Narambulla Creek ASF3 (51-6-0920),

Narambulla Creek ASF4 (51-6-0921), Narambulla and the assumptions and qualifications contained throughout the Report. IA1 (51-6-0926), Narambulla IA2 (51-6-0916), and Narambulla IA3 (51-6-0917) with limited site extents. Registered Aboriginal sites MF1 (51-6-0093) and MF2 (51-6-0095) were updated to reflect the identification of additional Aboriginal objects.

To date during the consultation and field work with RAPs no cultural values or oral history about the Project Area has been provided.

The scientific assessment of the Aboriginal sites within the Project Area determined that the Aboriginal objects identified comprise of locally sourced lithologies and typologies associated with everyday use. This material is unlikely to be *in situ* and offers limited research potential. The sites were therefore considered to be of low scientific (archaeological) significance. The exception to this is Narambulla Creek ASF3 (51-6-0920) which is considered to be of low-moderate scientific significance due to a higher density of artefactual material.

The draft recommendations have been formulated to reflect the level of archaeological (scientific) significance attributed to the Aboriginal sites, and the cultural values of these places provided by the RAP in the ACHA report.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.5

Recommendations

The following recommendations are based in consideration of the statutory requirements under the *National Parks and Wildlife Act 1974*, as well as the recommendations of previous assessments within the Project Area, the interests of the Aboriginal stakeholder groups, and the likely impacts of the proposed development.

Recommendation 1: Development of an Aboriginal Cultural Heritage Management Plan

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared in consultation with the RAPs before commencement of ground disturbing works that have the potential to impact the surface. The ACHMP should be reviewed and endorsed by the Department of Planning and Environment – Environment and Heritage.

The ACHMP will address project impacts and will provide details on:

- Aboriginal sites identified for the project
- Management measure and their progress towards completion
- The surface collection and subsurface salvage of areas where there will be direct impact to cultural material
- Continuing consultation and the involvement of RAPs
- Cultural Awareness Inductions for all contractor staff
- Protocols for Aboriginal cultural material finds
- Protocols for suspected human skeletal remains
- Provision for review and updates of the ACHMP.

Recommendation 2: Naming of Project Infrastructure

It has been recommended by the RAPs of the project that through consultation with local Aboriginal community members (where appropriate) the proponent uses locally accepted First Nations language words for the naming of Project infrastructure.

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1. Introduction

1.1 Background

Global Quarries Australia Pty Ltd (Global Quarries) propose to develop a quarry at Marulan, New South Wales (NSW).

The project involves establishment of hard rock quarry and progressive rehabilitation of the pits with virgin excavated natural material (VENM), excavated natural material (ENM) and other clean fill material. The project involves extraction of up to 500,000 tonnes per year of hard rock from the tuffaceous hard rock target resource estimated at approximately 7.7 million tonnes (Mt) at the site.

GHD have been engaged by Global Quarries to undertake Aboriginal archaeological and cultural heritage assessment for the project. The Aboriginal Cultural Heritage Assessment has been undertaken in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECC 2010).

1.2 Purpose of this report

This Archaeological Report (AR) has been prepared by GHD Pty Ltd (GHD) on behalf of Global Quarries as an Appendix to the Aboriginal Cultural Heritage Assessment (ACHA) report and will be included in the Environmental Impact Statement (EIS) to support the application for project approval under the Division 4.7 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). Much of the archaeological assessment and reporting for this ACHA was undertaken in June 2019 to November 2022 in accordance with the previously issued Secretaries Environmental Assessment Requirements (SEARs) issued on 13 May 2016 (SSD-9750) and the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (OEH 2010). An amendment to the access point off the Hume Highway on Winfarthing Road for the Project resulted in delays and the original SEARs expiring. Due to new SEARs being issued (SSD 65146459) and the amended access, a revised Aboriginal community consultation process was undertaken and updated to the existing draft ACHA and AR were made.

The AR provides an assessment of Aboriginal archaeological values for the Project Area in accordance with the SEARs and the following regulations and guidelines:

- *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005)
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHAs) (DECCW, 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010)
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011)
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (ICOMOS, 2013a)
- *NSW National Parks and Wildlife Regulation, 2009* (National Parks and Wildlife Service, 2009).

1.1.1 Objectives

The objectives of this report, in consideration of the SEARs and the requirements of the above guidelines and regulations, are as follows:

- Identify and describe Aboriginal objects located within the Project Area
- Identify and describe the archaeological potential for subsurface deposits within different landforms present in within the Project Area
- Identify and describe the cultural heritage values, including the significance of the Aboriginal objects that occur within the Project Area
- Describe how the requirements for consultation with Aboriginal people have been met following the ACHA process

- Present the views of Aboriginal people regarding the potential impact on cultural heritage within the Project Area
- Outline appropriate management requirements to protect and conserve Aboriginal objects that occur within the construction footprint within the Project Area
- Outline appropriate management requirements to avoid or mitigate any actual or likely harm, alternatives to harm, or if this is not possible, to manage (minimise) the harm.

1.3 Description of the development proposal

Global Quarries seeks to develop a quarrying operation on Lots 3 and 4 of DP 247199 and Lot 7001 of DP 1025585, in Marulan in the Southern Tablelands of NSW (here on referred to as 'the project'). The project involves extraction of up to 500,000 tonnes per year of hard rock for the supply of high-grade cement feedstock to the Sydney and regional markets over an approximate 18 year period. The target resource is a tuffaceous aggregate and is estimated at approximately 7.7 million tonnes of saleable product at the site.

The project will also involve the progressive rehabilitation of the extraction area through emplacement of VENM, ENM and other clean fill materials. The emplacement material will be sourced through back-loading of haulage vehicles with clean fill from construction projects throughout the Sydney basin.

The project constitutes development for the purpose of an extractive industry that extracts up to 500,000 tonnes of material per year from a total resource area of more than 5 million tonnes. The project is therefore defined as State Significant Development (SSD) and an Environmental Impact Statement (EIS) is required to be prepared to accompany the Development Application (DA) for determination by the NSW Minister for Planning or delegate.

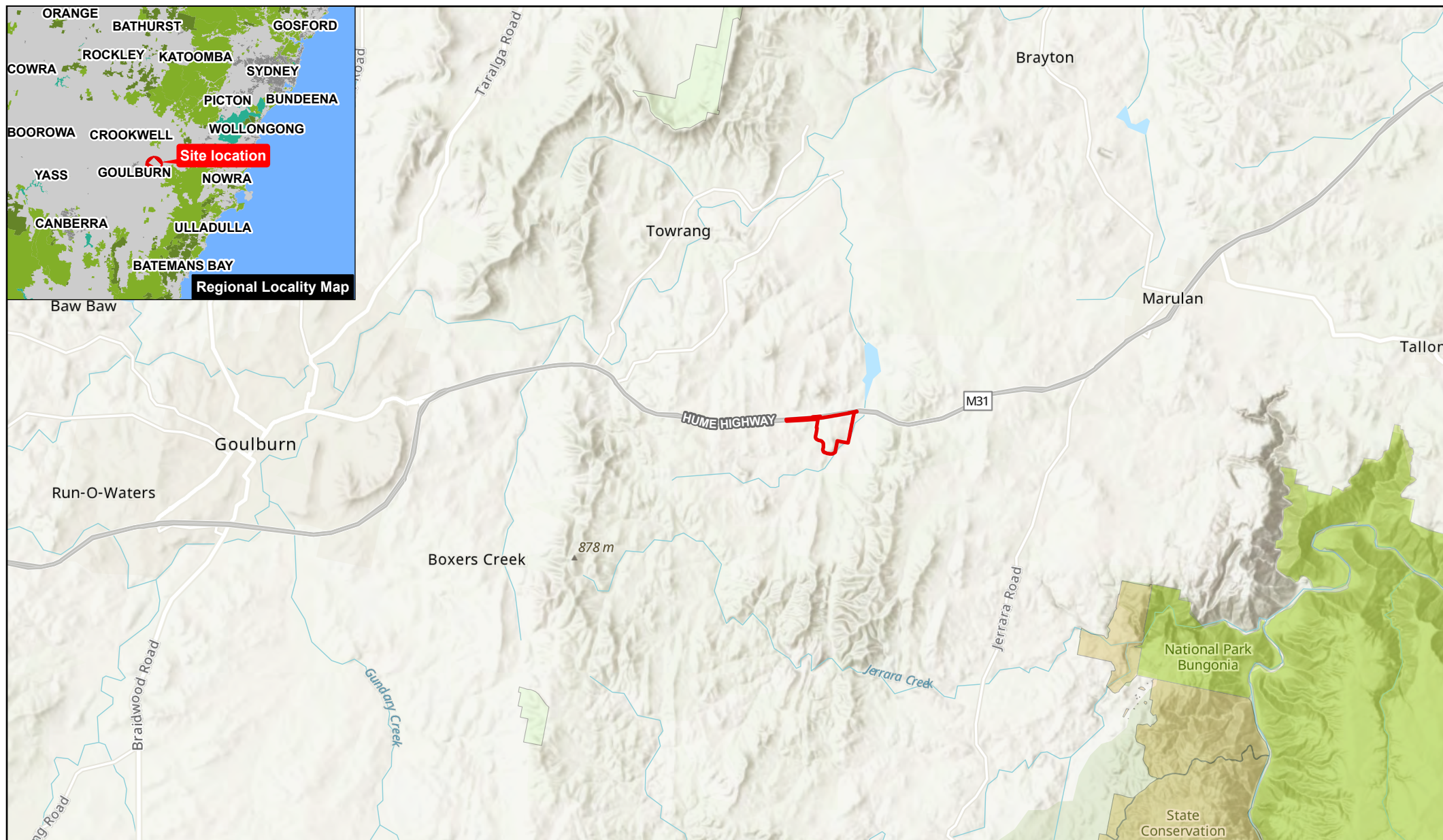
The project will incorporate the following activities:

- Establishment of hard rock quarry comprising an extraction pit, emplacement area, processing facilities, site offices and internal haul routes
- Construction of a new intersection with Hume Highway and the upgrade of the existing Hume Highway and Winfarthing Road intersection
- Extraction of up to 500,000 tonnes per year of hard rock from the tuffaceous hard rock target resource estimated at approximately 7.7 million tonnes at the site
- Extraction of hard rock resource by drilling, blasting for subsequent onsite processing for production of high-grade construction feedstock for the construction industries over an 18-year period
- Transportation of quarry products by road to greater Sydney and regional markets
- Importation of virgin excavated natural material (VENM), excavated natural material (ENM) and other suitable rehabilitation materials from major construction projects primarily through back-loading of haulage vehicles
- Progressive rehabilitation of the processing area, including the quarry void, using the emplaced overburden materials, and the imported VENM, ENM, and other rehabilitation materials
- Rehabilitation at the end of quarry life to create a final landform which will be safe, hydraulically and geotechnically stable, non-polluting, and which will closely resemble the original and surrounding landscape.

1.1.2 Site location

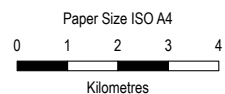
The area of proposed works and the Project Area for this ACHA includes two privately owned lots (Lots 3 and 4 of DP 247199, a lot owned by Crown Land (Lot 7001 of DP 1025585) and part of the Hume Highway Road reserve in Marulan in the Southern Tablelands of NSW. Marulan is part of the Goulburn Mulwaree Council Local Government Area (LGA) and is located approximately 163 kilometres southwest of Sydney and 122 kilometres northwest of Canberra. The study lies between Winfarthing Road and Narambulla Creek, which flows into the Wollondilly River, which runs along a north west axis between 6 and 9 kilometres from the Project Area.

The site falls within the boundaries of the Pejar Local Aboriginal Land Council (PLALC) .

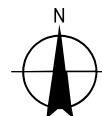


Legend

- Project Application Area
- Nature Reserve
- State Conservation Area
- National Park



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

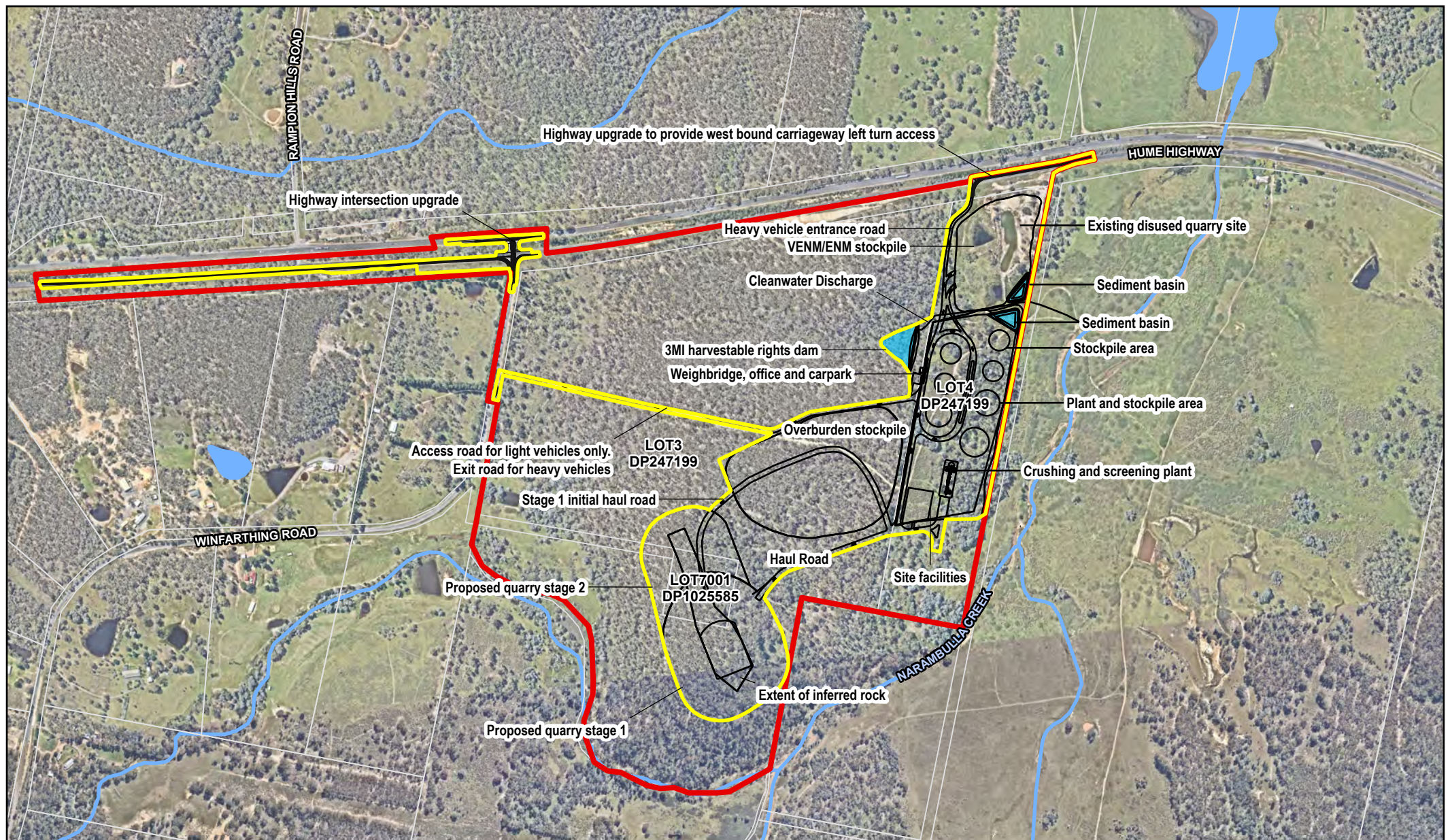


Global Quarries
Marulan quarry
Archaeological Report

Project No. **2127708**
Revision No. **0**
Date **24/09/2024**

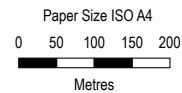
Regional context

FIGURE 1.1



Legend

- Project Application Area
- Disturbance Area
- Design
- Basins and water storage areas
- Waterways
- Cadastre



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Global Quarries
Marulan quarry
Archaeological Report

Project No. 2127708
Revision No. 0
Date 30/10/2024

Site Overview

FIGURE 1.2

1.4 Authorship

This report has been prepared by GHD Heritage Advisors Linda Sonogo and Melanie Thomson as well as GHD Archaeologist Ebony Pike. Amendments relating to the revised Aboriginal community consultation and works associated with the Winfarthing Road assessment have been included by Renée Regal (Senior heritage Consultant/Director, Regal Heritage).

All field work was completed by Niche Environment and Heritage, including Dierdre Lewis-Cook (Archaeologist, Niche), Renée Regal, Stella Quest (Archaeologist, Niche), and Riley Finnerty (Archaeologist, Niche).

Aboriginal community consultation was undertaken by Linda Sonogo, Melanie Thomson and Renée Regal.

The background review was undertaken by Linda Sonogo. The archaeological reporting was undertaken by Linda Sonogo, Melanie Thomson, Ebony Pike and Renée Regal.

Technical review was provided by GHD Heritage Team Leader Asher Ford and GHD Senior Heritage Advisor Kym Oatway.

Asher Ford BA (Hons, Anthropology)

Asher Ford has more than 16 years' experience in the heritage industry, undertaking projects for a wide range of clients and industries within New South Wales, Victoria, Tasmania, South Australia, and Queensland. He has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation. Asher is a full member of the Australian Association of Consulting Archaeologists.

Renée Regal BA (Hons, Archaeology)

Renée Regal is a Heritage consultant and the Director of Regal Heritage Pty Ltd with over 19 years' experience working in Aboriginal cultural heritage assessment in New South Wales. During this time Renée has worked in consultation with Australia's First Nations peoples on large number of assessments ranging in size and complexity, as well as several projects that have been both culturally sensitive and controversial.

She has extensive experience in field survey and excavation, as well as reporting, site specific cultural heritage inductions and legislative awareness workshops, peer review for compliancy and the development of Aboriginal Cultural Heritage Management Plans and applications for Aboriginal Heritage Impact Permits (AHIPs). Recently Renée has been working as an expert witness in the Land and Environment Court.

Linda Sonogo BA (Hons, Archaeology), MA (Cultural Heritage Management), PhD (Classical Archaeology)

Linda has 4 years' experience in the commercial archaeology sector of Victoria. She has experience in both historic and Indigenous archaeology in New South Wales, Victoria, Western Australia, Northern Territory and Tasmania, and has authored a number of CHMPs, Due Diligence Assessments, Historic Heritage Assessments and Consent Applications. Linda has worked with a variety of clients in both the public and private sectors and has successfully worked alongside various stakeholders, including local councils, state organisations, construction companies and Indigenous groups.

Melanie Thomson BSc (Hons, Archaeology)

Melanie has recently joined GHD as a Senior Heritage Consultant and has over 18 years' experience as a heritage consultant in NSW and Victoria. She has undertaken hundreds of projects for a wide range of clients and industries. Melanie has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation. Melanie has been involved on a number of state significant heritage projects in the Illawarra, including mining, water and gas infrastructure and residential development.

Ebony Pike BA, MArchEvoSci (Adv)

Ebony started working in the heritage industry in 2021 and has since worked primarily within the Victorian heritage industry, but also has experience in New South Wales. Ebony has been working on a wide variety of projects since joining GHD, including in indigenous and historic archaeology, lithic analysis, and fieldwork.

Kym Oataway, BA (Hons Anthropology)

Kym has more than 12 years' experience in the heritage industry, undertaking projects for a wide range of clients and industries within NSW, Victoria and QLD. She has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation.

1.5 Scope and limitations

This report: has been prepared by GHD for Global Quarries and may only be used and relied on by Global Quarries for the purpose agreed between GHD and Global Quarries as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Global Quarries arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

2. Statutory Considerations

2.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)

The Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth) was enacted at a Federal level to preserve and protect areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. Steps necessary for the protection of a threatened place are outlined in a gazette Ministerial Declaration (Sections 9 and 10). This can include the prevention of development.

As well as providing protection to areas, it can also protect objects by Declaration, in particular Aboriginal skeletal remains (Section 12). Although this is a Federal Act, it can be invoked on a State level if the State is unwilling or unable to provide protection for such sites or objects.

No Aboriginal sites or places within the subject area are currently subject to a Declaration.

2.2 Environment Protection and Biodiversity Conservation Act 1999

Commonwealth requirements in relation to environmental assessment (includes heritage) and management are principally specified in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The EPBC Act provides for listing of natural, historic or Indigenous heritage values on Commonwealth lands, under Australian Government control or that are of outstanding heritage value. Listings include the World Heritage List (WHL), National Heritage List (NHL) and Commonwealth Heritage List (CHL).

The EPBC Protected Matters Search Tool was accessed on 3 July 2024. There are no heritage values registered on the WHL, NHL or CHL within the Project Area.

2.3 Native Title Act 1993 (Commonwealth)

The Native Title Act 1993 (Commonwealth) provides recognition and protection for native title. The Act established the National Native Title Tribunal to administer claims to land by Aboriginal people. The Act also provides for Indigenous Land Use Agreements which allow native title claimants and/or holders control over the use and management of affected land and waters.

A search of the National Native Title Tribunal Registers was undertaken on the 3 July 2024 and returned no results in the Goulburn Mulwaree Local Government Area.

2.4 Aboriginal Land Rights Act 1983 (NSW)

The Aboriginal Land Rights Act 1983 allows for the transfer of ownership to an Aboriginal Land Council of vacant Crown land not required for an essential purpose or for residential land.

A portion of the Project Area is currently vacant Crown land, Lot 7001 DP 1025585, which is subject to an Aboriginal Land Claim by Pejar Local Aboriginal Council (ALC9317).

2.5 State Heritage Register (NSW)

The NSW Heritage Register is a database of heritage items in NSW. It includes declared Aboriginal Places, items listed on the State Heritage Register, listed interim heritage orders, items of state agency heritage registers, and items listed of local heritage significance on a local council's local environmental plan.

The State Heritage Register was searched on the 16 November 2022 and three places were listed near the Project Area. These places include:

- Old Marulan Town (SHR No. 00127)
- The Ben Hall Sites – Wandii (SHR No. 01827)
- Towrang Convict Stockade, Associated Sites and Road Formations (SHR No. 01905).

2.6 S170 Heritage and Conservation Register

The s170 Heritage and Conservation Register is a database of all heritage assets in NSW and is maintained by the state government under section 170 of the *NSW Heritage Act 1977*.

The s170 Heritage and Conservation Register was searched on 16 November 2022 and two places were listed within 15 kilometres of the Project Area:

- Goulburn Railway Precinct (database no. 4806291)
- Marulan Railway Precinct (database no. 4806257).

2.7 National Parks and Wildlife Act 1974 (NSW)

The National Parks & Wildlife Act 1974 (NPW Act) provides blanket protection for Aboriginal objects (material evidence of indigenous occupation) and Aboriginal places (areas of cultural significance to the Aboriginal community) across NSW. An Aboriginal object is defined as:

“...any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains.”

An Aboriginal place is any place declared to be an Aboriginal place by the Minister for Climate Change and the Environment, under Section 84 of the Act.

Heritage NSW are responsible for maintaining the Aboriginal Heritage Information Management System (AHIMS) online database of recorded Aboriginal place and objects in NSW.

A search of the AHIMS was undertaken on the 30 March 2021 and 16 February 2022 and 2 August 2024 covering an extensive 1000 metre area surrounding the current Project Area. The results of the searches identified 93 Aboriginal sites in or around the Project Area. These results and the archaeological context of the Project Area is summarised in the ACHA report and further detailed in the AR report.

3. Desktop assessment

3.1 Landscape context

The following section provides a broad view of the Project Area in terms of its geology, geomorphology and landscape forms. The landscape context of the Project Area is discussed in order to understand the potential of the landscape to retain and preserve Aboriginal cultural material.

3.1.1 Geology, geomorphology and landforms

The Project Area is located in the Southeastern Highlands but close to the border of the Sydney Basin. It lies on the Lachlan Fold belt between the Towrang and Yarralaw Faults, just west of the Yarralaw Fault (Thomas, et al., 2013).

On a wider regional level the eastern half of NSW is made up of 'sedimentary and metamorphic rocks that were intruded by granites and folded and faulted while the continent was part of Gondwana. The specific geology and geomorphology of Southeastern Highlands can be explained as part of Lachlan fold belt, which is a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies and deformed by four episodes of folding and uplift.' (NSW Department of Planning, Industry and Environment, 2019). The Project Area itself is labelled as a 'Qr' deposit on the Goulburn 1:2500 000 Geological Map, which is described as 'residual deposits of clayey, coarse to fine-grained sand and sandy clay with sporadic ferruginous to siliceous, pebble to cobble sized cornerstones' (Thomas, et al., 2013).

The area was formed through the deposition of fine sediment that is now shales, sandstone and volcanic sediments found in series of parallel troughs, e.g. Tumut, Hill End and from Captain's Flat to Goulburn during the Devonian period when the area was covered by seawater. During the Tertiary period there was widespread volcanic activity and there were large areas of river sands and gravels in the mid-Shoalhaven valley. The largest volcano was Canobolas (50 kilometres in diameter approximately 170 kilometres north of the Project Area).

The area has significant gold deposits but also holds other significant mineral deposits such as porphyry-related copper-gold, volcanogenic base-metal deposits and Cobar-type gold and base metal deposits. There are a number of historic mines littered across the region (Suppel, Barnes, & Scheibner, 1998).

The landforms found in the wider area are typically hills, crests, slopes saddles and spurs. Main features of the bioregion are plateau remnants, granite basins with prominent ridges 'with prominent ridges formed on contact metamorphic rocks and the western ramp grading to the Southwestern Slopes (NSW Department of Planning, Industry and Environment, 2019).

In the southern section of the Project Area there is a hill, known as 'Shelley's' hill, that is 698 metres above sea level (Geoscience Australia, 2019).

The soil profile of the Project Area is made up of erosional deposits of Kurosols (Hird, 1991). However, it is also known that soils deposits across the Southern Tablelands can vary over short distances. On a general level, the surface soils are loamy and they lie over a clay subsoil. These two horizons are interspersed by pockets of weathered bedrock. It is also known that small areas of bedrock can be found at quite shallow depths. These have been collected in the past, quite possibly during early settlement, and put to the side to make agricultural activities easier (Banksia Heritage, 2007).

3.1.2 Topography

The Project Area is located adjacent to the Hume Highway, approximately 10 kilometres southwest of Marulan. The area is characterised by a low gradient landscape consisting of broad ridges, slopes, saddles, and spurs. A small hill, 'Shelley's' dominates the area.

Much of the area has undergone extensive modification as a result of European activities. Such activities include the clearance of original native vegetation, establishment and maintenance of improved pasture grassland, construction of high voltage overhead powerlines, construction of the Hume Highway and Winfarthing Road, and the construction of farm dams, fences, sheds, and tracks.

3.1.3 Waterways

The Project Area abuts Narambulla Creek along its eastern border. Narambulla Creek is a third order stream which flows into the Wollondilly River. First and second order streams that consist of named or unnamed waterway with intermittent flow following rain events only transect the Project Area, with little or no defined drainage channel, little or no flow or free standing water or pools after rain events (e.g. dry gullies or shallow floodplain depressions with no permanent aquatic flora present) (Strahler, 1952).

3.1.4 Climate

The site has a temperate climate. Based on data from the Goulburn weather station, the site has a mean annual rainfall of 665.8 millimetres, with the highest rainfall tending to occur in January. The mean daily maximum temperature is 20.1 degrees Celsius and mean daily minimum temperature is 7.3 degrees Celsius (BOM, 2022).

3.1.5 Geology

The Geological Map Goulburn Geological Map Series (Geological Survey of NSW, 1985) indicates that the Project Area is encompassed within the following geological:

- Os-s: silty sandstone, quartz greywacke, siltstone, quartzite, shale phyllite, minor amounts of porphyry.

The local geology as it intersects with the Project Area is shown on Figure 3.1.

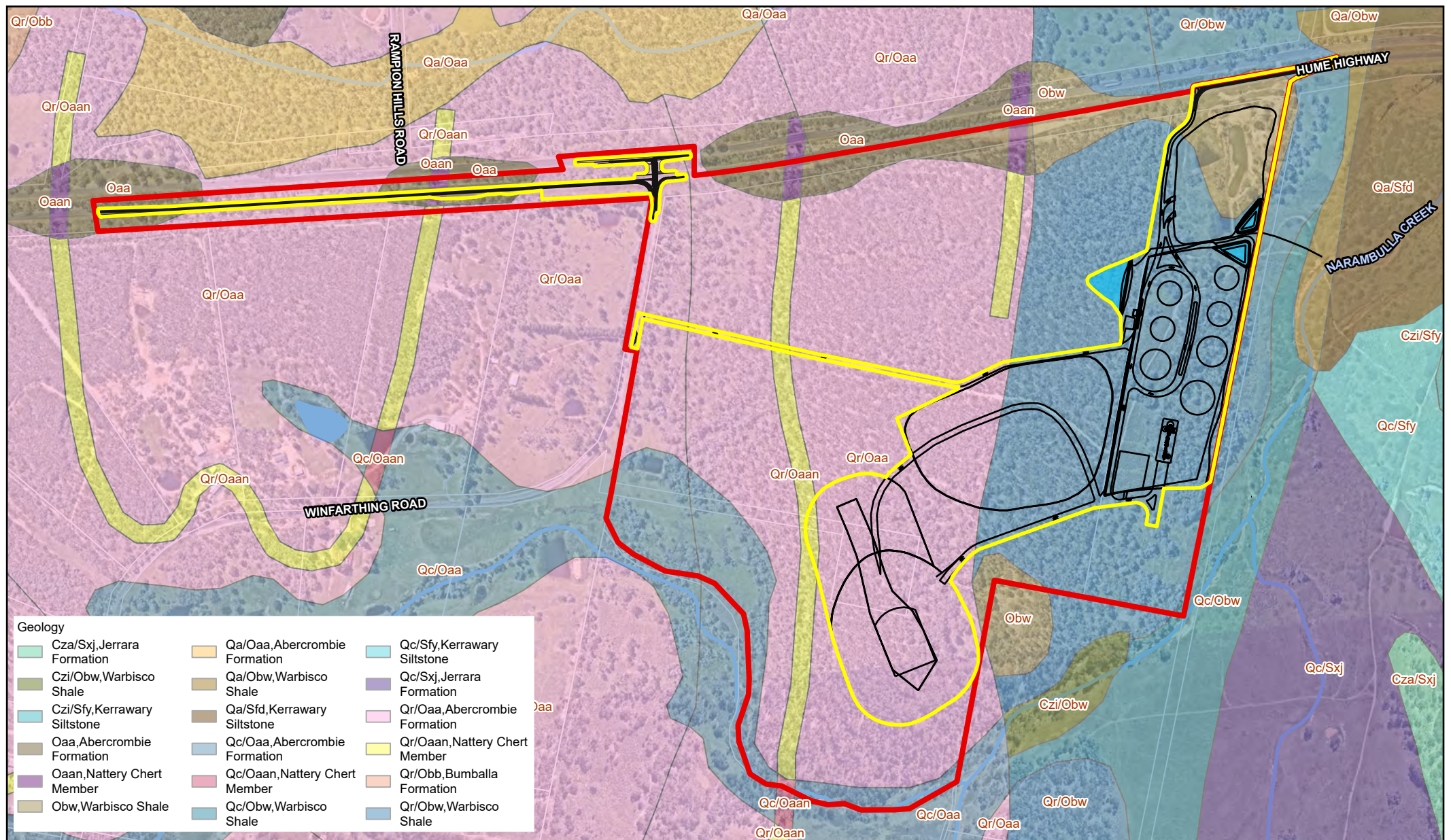
3.1.6 Soils

The Soil Landscapes of the Goulburn 1:250,000 Sheet (Soil Conservation Service of NSW, 1990) indicates that the Project Area is encompassed predominantly within the Midgee soil landscape, followed by the Blakney Creek soil landscape and Disturbed Terrain. The description for these soil landscapes is summarized in Table 3.1 below and are shown on Figure 3.2.

Table 3.1 Summary of soil landscapes

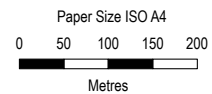
Landscape group	Landscape description	Soil	Limitation
Midgee	Crests, sideslopes, and footslopes Gradients 10-30%. Comprises most commonly of dry sclerophyll forest of red stringbark and scribbly gum.	Stony brown sandy loams typically overlying yellow to reddish stony sandy clay loams or light yellow stony sandy loams, with lower flats associated with yellow stony (sometimes mottled) light structured clay.	Low wet-bearing strength, low soil fertility, very high erosion hazard, high erodibility, moderately permeable soils.
Blakney Creek	Crests, upper sides, sideslopes, and footslopes. Gradients <10%. Extensive clearing of native forests.	Stony sandy loams typically overlying reddish or yellowish stony sandy clay loams, over yellow or yellow-grey mottled clays.	Low wet-bearing strength, low soil fertility, hard setting soils, moderately permeable soils.
Disturbed Terrain (xx)	None	Disturbed	N/A

The Midgee soil landscape is associated with Ordovician and some Denovian and lower Silurian sediments and metasediments in hilly terrain, in which the parent soils are comprised of *in situ* alluvial-colluvial material derived from the parent rock. It is therefore likely to retain archaeological material within this soil type. The landforms around the Project Area comprises of rolling low hills and hills with fixed, shallow erosional stream channels. The disturbed terrain has undergone significant alteration to the extent that archaeological material is unlikely to be present, as a result of identified activities such as quarrying. There is still potential for archaeological material to be present in a disturbed context.

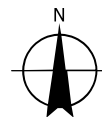


Legend

- Project Application Area
- Disturbance Area
- Design
- Basins and water storage areas



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

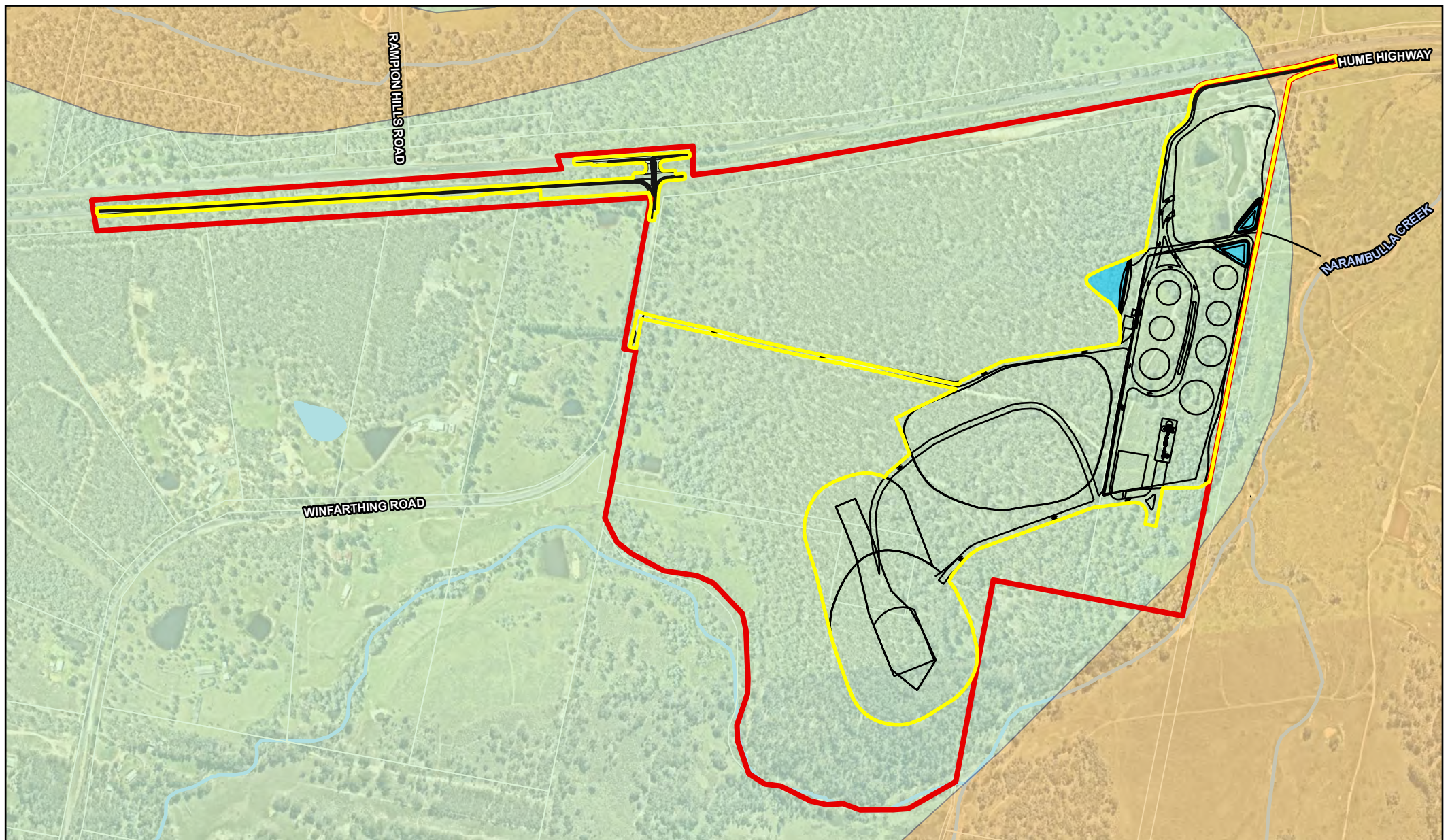


Global Quarries
Marulan quarry
Archaeological Report

Project No. 2127708
Revision No. 0
Date 24/09/2024

Geology of Project Area

FIGURE 3.1



Legend

- | | |
|--------------------------|--------------------------------|
| Project Application Area | Basins and water storage areas |
| Disturbance Area | Soil landscapes |
| Design | Blakney Creek |
| | Midgee |

Paper Size ISO A4
0 50 100 150 200
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Global Quarries
Marulan quarry
Archaeological Report

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Revision No. 0
Date 24/09/2024

Soil Landscapes of Project Area

FIGURE 3.2

3.2 Regional Character

The Marulan region contains several resources that was utilised by Aboriginal inhabitants. Stone is used by Aboriginal people for a variety of purposes, which is predominantly represented through the formation of tools. Raw material resources are available in nearby outcrops of stone from the underlying geology of the region or would have been brought into the area by Aboriginal people. The knapping of stone by Aboriginal people varied based on the task and the properties of the stone, which would then require further modification for its desired use.

Aboriginal sites in the region have largely been found surrounding permanent bodies of water, with the predominant site type in the region consisting of artefact scatters. The artefact scatter patterns reflect the transient use of the sites within the region, with some camps indicating the short-term use of a place. Camps have largely been identified in association with creeks and tributaries within the region. Previous archaeological assessments have indicated that the available flora and fauna surrounding the Marulan area would have been utilized by Aboriginal people for activities associated with daily life including food and medicine.

In conclusion, the local environment surrounding the Project Area would have provided ideal conditions for utilization by Aboriginal people traversing through the landscape. The evidence of this utilization remains in a variety of forms, including lithic artefacts and open camp sites (refer to Table 3.2 Summary of AHIMS site types found within the wider area Table 3.2).

3.2.1 Land use history

The Project Area is currently heavily vegetated with a dirt road crossing the Project Area in an east-west direction. It is located in the County of Arglye, Parish of Nattery in the LGA Goulburn Mulwaree. This area is under the jurisdiction of the Pejar Aboriginal Land Council.

This region was slowly settled after the initial European settlement in the Sydney region, although some pastoralists were known to have been occupying the area by the mid-19th century. The Ruess and Browne's map of New South Wales 1860-1869 showing pastoral runs, squattages, districts, counties, towns and reserves, indicates that the Project Area was possibly a part of Towrang pastoral run (Reuss, Brown, cartographer, & Degotardi, 1860).

Definitive evidence of pastoral and European settlement in the area comes from Shelley's Flat, which is located about 400 metres to the northeast of the Project Area. This site is part of a set of private residential buildings under the name 'The Ben Hall Sites – Wandii' including the Plumb's Inn and Douglass Inn' (OEH, 2019). It includes a house, Inn and outbuildings that are listed on the State Inventory – Database number: 5055031; File number: H03/00307 (OEH, 2019).

Plumb's Inn was famous in the history of the well-known bushranger Ben Hall as it is where a prominent pastoralist and Member of Parliament for Murrumbidgee, William Macleay, 'outgunned' the bushrangers (OEH, 2019). This was seen as an act of resistance and because such behaviour was not common, the incident has become a large part of the mythology surrounding Hall and other bushrangers in the area (OEH, 2019).

The complex was built in 1843 and is an example of a former Colonial Georgian coaching inn. It has been assessed as having local level potential for archaeological evidence regarding its early use as hotel from 1843. It is currently known now as a private property called Wandii (OEH, 2019).

Approximately 5 kilometres to the west of the Project Area is the Towrang Convict Stockade, Associated Sites and Road Formations (State Heritage Register 01905). There is a series of six culverts built by a convict gang 1838-1843 on the remnant sections of the Great South Road (just west of Towrang Road to just east of Carrick Road, between 6 and 7 kilometres west of the Project Area). The site also consists of Towrang Convict Stockade (archaeological remains), Powder Magazine, Cemetery and Towrang / Lennox Bridge (OEH, 2019). There was also a railway line that was opened from Moss Vale to Marulan in 1868. A siding was opened in Wingello 1871, which showed up on the timetable as a stopping place in 1885 (Black & Black, 2019).

The Project Area is also located only 7 to 8 kilometres west of Old Marulan. An archaeological survey undertaken by Banksia Heritage in 2007 highlighted the archaeological significance of the town and demonstrated that it was a typical mid 19th century European settlement before its decline after 1870 (Banksia Heritage, 2007).

In more recent times there were three archaeological surveys undertaken inside the Project Area for a mushroom substrate facility; however, the facility was never constructed (Navin Officer Heritage Consultants, 1997; Navin Officer Heritage Consultants, 2000; Navin Officer Heritage Consultants, 1997; Perram & Partners, 2008).

3.3 Ethnographic Context

Our knowledge of Aboriginal people and their land-use patterns and way of life rely on the accounts and documentation made by early Europeans. Information on pre-Contact Aboriginal spatial organisation is based on 19th century European accounts from the time of initial contact. Many of the ethnohistories of Aboriginal people will reflect the European mindset of what the lifestyles of Indigenous people were and are not necessarily an accurate portrayal of Aboriginal life and social organisation.

3.3.1 Ethnographic Context

The Project Area lies almost in the middle between Canberra and Sydney. Specifically, it is located on the general border of the Gundungarra (or Gandangara) and Ngunnawal people. It is traditionally believed that the Gundungarra occupied lands to the north of Goulburn while the Ngunnawal occupied lands to the south. Other groups in the area included the Wandandian people, who occupied the area east of the Great Dividing Range (Higginbotham, Kass, & Jackson-Stepowski, 2009). All three clans had similar languages and it is commonly thought that the Gundungarra and Ngunnawal languages were originally part of the same language group but separated at a later unknown time (Barrett, 2015).

The Ngunnawal and Gundungarra, were allies and along with other groups (Wiradjuri, Walgalu, Ngario, Yuin, and Jaitmatang) came together to socialise, organise marriages, make laws, conduct ceremonies and to trade (ACT Natural Resource Management Council). They would make an annual trek to Tidbinbilla and used to meet in the Blue Mountains in the warmer months to gather Bogong moths (Massola, 1969) that flocked to the area looking for a retreat from the heat to use as a high protein food source.

The Tidbinbilla Nature Reserve is located to the approximately 120 kilometres to the southwest of the Project Area and is in Ngunnawal territory. However, it is not only important to Ngunnawal people but also to other nearby Indigenous groups. One of the most well-known sites in the area is the Birrigai rockshelter, which is considered to be one of the oldest rockshelters in the area (Williams, et al., 2015). It was first occupied in the terminal Pleistocene but the intensity of occupation reached its peak around 3,000 BP (Williams, et al., 2015).

The Bindook Highlands were also important to the Gundungarra people's mythologies. One particular story tells of Mirrigan, the Tiger Cat, who chased Gurangatch, a type of Rainbow Serpent, along the Wollondilly River. Another tells of how the Bullun brother gods killed the cannibal Death Adder 'Gubba' at Hell Hole Creek, 9 kilometres from the Bindook Highlands.

European settlement in the area of Argyle was slow in the beginning, which allowed local Indigenous groups to maintain pre-contact conditions for a longer period than those who lived in areas closer to Sydney (Cumming, 2008). However, over time, as more Europeans moved into the area, the landscape was cleared for pastoral and agricultural activities and as a result food sources that Aboriginal people were reliant on were no longer as prevalent (Cumming, 2008). Slowly, the Ngunnawal and Gundungarra people became more dependent on European subsistence, which resulted in the working on settlements within the region (Cumming, 2008).

One example of such growing dependence was on the supply of goods. In 1814 Governor Macquarie organised an official distribution of blankets to Indigenous populations in an attempt to promote cooperation with the settlers (Cumming, 2008). Over time, different bodies of authority, such as magistrates and the police, began issuing blankets every year on the Queen's Birthday (Cumming, 2008). Slowly, these types of events became an important source of supplies for Aboriginal people (Cumming, 2008).

3.4 Archaeological Context

Most archaeological sites located in this region have been dated to within the Late Holocene, especially the last 5,000 years BP following the development of modern climatic and environmental conditions (Wanner, et al., 2008). The climate during the Last Glacial Maximum, approximately 20,000 years ago, was cooler and drier than the present-day conditions, leading the temperature to be on average 6 °C (AMBS, 2011).

Early regional studies developed archaeological prediction models are utilised across the entirety of the LGA. Small scale archaeological investigations have identified that the prediction model remains consistent. The prediction model indicates concentrations of sites located in proximity to riverine resources such as Mulwaree Pones and the Wollondilly River, and lacustrine resource zones including Lake Bathurst and The Morass (Fuller, 1989; AMBS, 2011).

Archaeological sites dating to the Holocene period are more frequently identified in the Goulburn-Mulwaree region. This is thought to reflect an intensification of the occupation of the area in this period, but also greater survivability of these sites (AMBS, 2006, p. 241). The establishment of Aboriginal sites has been observed to occur predominantly within proximity to major rivers in the region, with previous archaeological assessments identifying a correlation between major rivers and larger Aboriginal sites. Although sites have been found along minor waterways, these tend to be small in size.

The oldest dated sites for Aboriginal occupation in the Goulburn Mulwaree region are from the late Pleistocene period, with radiocarbon dating establishing that the region has been occupied for at least 21,000 years at Birrigai rock shelter in the northern foothills of the Australian Alps (AMBS, 2011). Late Pleistocene sites have also been identified near the Project Area at Bulee Brook 2 (18,810 ±300 BP) and Bob's Cave (10,850 ±160 BP) (AMBS, 2011).

Evidence of Aboriginal occupation dated to 50,000-60,000 BP at Lake Mungo in NSW, it is likely that Aboriginal people have lived in the Goulburn Mulwaree region for even longer than indicated by the oldest recorded dates available at present. The identification of Aboriginal sites within the region provides evidence of a long occupation, but also provides evidence of a dynamic culture that has changed through time.

3.5 Archaeological work

3.5.1 Aboriginal Heritage Information Management System

An extensive search of the AHIMS with a buffer of 1000 metres was conducted on 23 August 2019, for the update of the ACHA a revised AHIMS search of the Project Area was completed on the 2 August 2024. both searches results are included in Appendix A. This search showed there are 91 Aboriginal sites in or around the Project Area (Table 3.2). The revised search noted nine Aboriginal cultural heritage sites that's details are restricted access. Consultation with Mr David Gordon of Heritage NSW noted that none of these restricted sites fell within close proximity of the current Project Area (Appendix B).

Table 3.2 Summary of AHIMS site types found within the wider area

Site Type	AHIMS Site Feature	Number	Total percentage (%)
Isolated find	Artefact	3	4
Open Camp Site	Artefact	5	4
	Artefact	63	70
	Potential Archaeological Deposit	9	10
	Modified Tree (Carved or Scarred)	8	8
	Stone Arrangements	2	2
	Stone Quarry	1	1
Total		91	100

At the time of the initial AHIMS search there were three known Aboriginal sites currently located within the project (Table 3.3; Figure 1.1) and four known Aboriginal sites within 400 metres of the Project Area. The majority of known Aboriginal sites lie to the south in proximity to Narambulla Creek (refer to Figure 3.3). These have primarily been identified during archaeological subsurface excavations for proposed development projects. Post the current assessment works a further six Aboriginal sites were identified through survey and test excavation.

3.5.1.1 Known sites within the Project Area

Table 3.3 List of known Aboriginal sites in the Project Area

Site number	Site name	Site type	Easting	Northing
51-6-0093	MF 1 -Winfarthing Road	Artefact - Isolated find	765080	6151200
51-6-0095	MF 2 - Winfarthing Road	Artefact - Isolated find	765190	6151120
51-6-0094	MF 3 - Narambulla Creek	Artefact - Open camp site	765870	6151120

MF 1 – Winfarthing Road AHIMS #51-6-0093

This site is comprised of an isolated find that was found on a track in a disturbed context. It is located near the entrance gate on Winfarthing Road. The artefact found was a good quality quartz flake with a step termination and five negative flake scars (length 25 millimetres, width 24 millimetres, thickness 7 millimetres).

MF 2 – Winfarthing Road AHIMS #51-6-0095

This site is comprised of an isolated find found in an exposed area, mid-slope on a low ridge. The artefact recorded was made from crystal quartz, it had a crushed termination but no other diagnostic features.

MF 3 – Narambulla Creek AHIMS #51-6-0094

This site is a low-density artefact scatter located at the edge of a cleared pasture. There is an area next to the cleared pasture that consists of forest vegetation with significant leaf litter. The site is located mid-slope and on a minor spur above a shallow drainage line. Two artefacts were recorded at the site 18 metres apart. One quartzite flake with three negative flake scars and possible use wear; and one silcrete flake associated with core rejuvenation and five negative flake scars.

3.5.1.2 Known sites within 400 metres of the Project Area

Table 3.4 List of known Aboriginal sites within 400 metres of the Project Area

Site number	Site name	Site type	Easting	Northing
51-6-0096	MF 4 – Narambulla Creek	Artefact - Open camp site	765950	6150620
51-6-0422	Winfarthing Road WR 1	Artefact scatter (14 artefacts)	765887	6150772
51-6-0428	Winfarthing Road Isolated Find – WRIF1	Artefact – Isolated find	765994	6150702
51-6-0429	Winfarthing Road WR 2	Artefact (10 artefacts)	765920	6150600

MF4 (AHIMS 51-6-0096) is an important site which is located within 10 metres of the Project Area. This site is located on the eastern bank of the Narambulla Creek and near the south eastern corner of the Project Area. A description of the site is included below because of the higher number of artefacts found on creek channel and the close proximity of the site to the Project Area.

MF 4 – Narambulla Creek AHIMS #51-6-0096

This site is a high-density artefact scatter with over 100 artefacts. MF 4 – Narambulla Creek (MF4) is located in a large open area (150 metres x 30 metres) on the terraces and banks of Narambulla Creek in an area that is heavily eroded and has been previously cleared for grazing, similar to MF 3 – Narambulla Creek. The site traverses the creek and is located at the foot of ‘Shelley’ hill. Artefacts were found in the creek bed on the grassed flats (where stock had disturbed the ground) and eroding out of the creek bank. The site is likely to be much larger

than the recorded site boundary but this could not be determined due to poor ground surface visibility (GSV) at the time of assessment.

Due to the scale of the site, individual artefacts were not recorded during the survey in 1997. However, the density, typologies and lithologies were recorded. Typologies included: an anvil/hammer stone, cores (including bipolar blade cores), blades, backed blades, flakes, flaked pieces, and chips. The types of raw materials noted were chert, silcrete, quartz, indurated mudstone, and quartzite.

The artefact scatter is located along Narambulla Creek and is considered to be very important for the Aboriginal community as a link to their ancestors and their past. The Aboriginal groups expressed their wish to see the site preserved. The site is also considered significant for its scientific and archaeological value (relatively undisturbed, size, depth of deposit and the possibility of intact stratigraphy with a range of artefacts and raw materials) and for its representativeness (the only large artefact scatter to be recorded away from the main river courses). Its scientific and archaeological significance is based on the relatively undisturbed nature of the deposit, its large size, the significant depth of deposit and the possibility of intact stratigraphy. Its representativeness of the site is based on the high range of artefacts and raw materials found in the assemblage and its rarity because it was the only large artefact scatter recorded away from the main water courses.

The following management strategies were recommended to preserve the site:

- Instigation of a revegetation program for the immediate creek banks
- Temporary fencing of the creek banks and revegetation areas
- Restricting or eliminating stock movement down to the creek in the area of the site
- Continued stock grazing on the unfenced sections of the site was considered appropriate provided stock levels remained low and did not pose an erosion threat
- No ploughing or cultivation should occur within the defined site area
- The site and its conservation requirements should be included on the Mulwaree Shire Local Environmental Plan, and a caveat or some other legal instrument on the land title.

There are also two previously recorded Aboriginal sites (MF 5 – Narambulla Creek and MF 6 – Narambulla Creek) located outside the Project Area to the southeast.

MF 5 is a low-density artefact scatter with three recorded artefacts. The site was located on the basal slope of a ridge and consisted of one quartz flaked piece, one quartz flake, and one quartzite flake.

MF 6 is an isolated find. It was located on a basal slope above Narambulla Creek about 100 metres south of MF 5. It consisted of one quartz flake.

Other important sites in the area

The Gundungarra Traditional Owners have advised that a place of great cultural significance is located along Narambulla Creek and is adjacent to the Project Area. This is a place where a massacre of Gundungarra people occurred which that can be verified by Elders from the Blue Mountains (Delise Freeman, PLALC pers. comm.)

3.5.2 Previous archaeological investigations

Previous archaeological studies relevant to the current Project Area that have been completed in the region have been undertaken as part of archaeological assessments for the Lynwood Quarry, located to the east of the current Project Area. The remaining reports are archaeological investigations for other developments in the area. Three of these reports relate to a Mushroom Substrate Facility that includes the current Project Area in its project area. It is therefore highly relevant to this current investigation (report no.'s 102090, 102091 and 102092).

Through an extensive search undertaken on AHIMS, 13 reports were identified in the Project Area (100615 is a draft copy of 100637 therefore only the latter has been included in the following summaries).

Umwelt Environmental Consultants (2005)– AHIMS #99404

This report presents the results for an Aboriginal survey and assessment undertaken for Lynwood Quarry, a hard rock quarry to the west of Marulan. This report is particularly important to this study for the similar project type and location just to the northeast of the Project Area.

A survey was conducted to assess all landforms with a high potential for sites and a representative sample of all other landforms. The survey included areas that would be impacted by the project and some areas that would not be impacted. It concentrated on the water systems (Marulan Creek and Joarimin Creek, their tributaries, and the upper tributary system associated with Lockyersleigh Creek), and a representative sample of crests, saddles and slopes.

Fifty-two previously unrecorded sites were located during the survey (two were outside the Project Area), which included 12 isolated finds, seven scarred trees and two stone arrangements.

Most of the isolated artefacts and artefact scatters were considered to have low cultural significance except those that were found associated with the stone arrangement, which were increased to moderate-high or high cultural significance. The stone arrangement was considered to have high cultural significance because of its association with male initiation rites. The scarred trees associated with the stone arrangement were considered to be of moderate-high to high significance and all the others were considered to have moderate cultural significance.

Archaeological Heritage Surveys (2005) – AHIMS #99620

This report presents the results for an archaeological survey for a project that proposed to subdivide 2500 hectares into 37 separate lots approximately 2.5 kilometres north from the current Project Area.

During the survey, 33 Aboriginal sites were located (total 125 artefacts), they were 23 artefact scatters (one probably with a scarred tree) and 10 isolated finds.

The majority of the sites were considered to have low archaeological / scientific significance at a local level but were considered to be culturally significant to the Aboriginal community.

Silcrete was the predominant lithology making up 38.4% of the total artefacts and followed by quartz with 31.2%. Other lithologies present included volcanic, quartzite, chert, chalcedony, and tuff. Flakes made up the majority of the assemblage with 77.9%, other artefact typologies included flaked pieces, cores, chips, blades, manuport, hammerstones, and modified pebbles. Of all the sites, 13 were found on basal slopes, nine associated with a major creek line, six associated with an ephemeral drainage, four mid-slope, three upper slope, three on the crest, and one in the saddle of a hill.

Umwelt Environmental Consultants (2007) – AHIMS #100613

This draft Aboriginal Heritage Management Plan was prepared to address the requirements set out in the Development Consent for the Lynwood Quarry.

The Consent included the consent to destroy 12 Aboriginal places. As part of the sub surface excavation methodology, the artefacts that were located were to be analysed. After analysis, they were to form part of a display at the Lynwood Quarry office for educational purposes and some were to be displayed at the Marulan District Historic Society. Other management conditions included fencing and signage, the removal of stock, bushfire hazard reduction, erosion control, feral animal and noxious and pest weed control, access for teaching purposes and research, site monitoring, management plans for previously unknown sites and human skeletal

remains, preparation of an annual environmental management report, and a review of the AHMP every three years after review of all subsurface investigation and salvage reports.

Umwelt Environmental Consultants (2006)– AHIMS #100614

As part of the Lynwood Quarry project, a survey was undertaken along the proposed easements and substation for the installation of 2 kilometres section of 66kv transmission line, two 22kV transmission lines extending to Marulan village and the possibility of extra transmission lines in the future along with a zone substation.

Fifteen Aboriginal sites were located during the survey. Of those, eight that were located within the easement and six within the Project Area were considered to have low archaeological significance. The remaining site was considered to have high archaeological significance. The overall Project Area was assessed as having low archaeological research potential because of prior disturbance from land clearing, grazing and erosion.

Primarily the sites located during the survey were artefact scatters with the most prevalent lithologies present were silcrete and quartz. Three unusual tool types were present within the assemblage including backed points, an elouera, and a grinding dish. It was concluded that the absence of these tool types in the area is due to a lack of identification of these tool types and were instead likely to be utilised within this region.

Umwelt Environmental Consultants (2007) – AHIMS #100637

This report outlines the research design and methodology as part of a section 87 preliminary research permit and a combined Section 87/Section 90 consent application for the Lynwood Quarry project.

As part of this project subsurface excavation was proposed and the research design focused on four themes:

- The distribution and density of artefacts;
- Does this align with patterns of differential use of the landscape predicted from ethnography/ethnohistory and Aboriginal oral history;
- How the artefactual evidence informs us of land use patterns; and
- Chronology of Aboriginal use of the Lynwood Quarry.

Umwelt Environmental Consultants (2008) – AHIMS #100779

Results from the subsurface excavation for the Lynwood Quarry are presented in this report.

The artefacts were primarily located on the spur crests and on the single lower slope / minor floodplain boundary. Artefacts were also found on lower slopes in close proximity to watercourses but smaller quantities, very few were located on mid or upper slopes. The number of artefacts were evenly distributed between areas exposed to cold winds and those in sheltered areas suggesting that the seasons did not limit occupation locations.

The most prevalent typology within the assemblage was broken flakes, this was followed by flaked pieces, flakes, and cores. A single representative of the following typologies included geometric microlith, manuport, and broken retouched flake. Primarily the assemblage was comprised of quartz with representatives of the following lithologies including quartzite, silcrete, chert, and aplite. A detailed artefact analysis will be included in the next stage report.

Umwelt Environmental Consultants (2008) – AHIMS #101034

A detailed analysis of the artefacts found during stage 1B works for Lynwood Quarry are presented in this report.

In total the assemblage contained 363 artefacts, with 52 artefacts excavated from 110 test pits and 311 artefacts excavated from 20 pole locations (AHIMS report no. 100779). There were several broken artefacts recovered from the test pits, which is consistent with high levels of ground disturbance within the Project Area. Spatially the artefacts were distributed in association with the largest tributary and were assessed as having potential for a complex assemblage.

The study concludes that the riparian corridors (50 metres of a higher order tributary) were areas of the highest degree of occupation and are most likely to have complex assemblages. It also concluded that when spur crests are found near a semi-permanent water source, the crests and the adjoining slopes down to the creek line were likely used as camp sites.

Local Indigenous groups assessed the area as being culturally significant due to the tangible evidence of the land use by their ancestors. Joarimin Creek South is assessed as having “great social significance” to Aboriginal people and was also assessed as having moderate overall archaeological significance. Agreement has been made to protect this site in situ for the 30-year life of the quarry. Other sites were assessed as having an overall low archaeological significance.

Umwelt Environmental Consultants (2008) – AHIMS #101183

This project outlines the methodology, results and interpretation from stage 2 works at the Lynwood Quarry, which was the subsurface testing of known sites, the archaeological terrain and monitoring of the Old Marulan Section 60 Salvage.

Over the course of the investigation, 648 surface and subsurface artefacts were collected. The lithologies present includes silcrete (n=358) followed by quartz (n=237), and ignimbrite, hornfels, dolerite, chert, basalt, chalcedony, and indeterminate.

The most predominant artefact type was broken flakes (n=516), followed by flakes, flaked pieces, cores, and retouched flakes. The high number of broken flakes reflects the high degree of ground disturbance in the area. Analysis of the lithologies indicated that a large amount of the raw material was sourced from elsewhere are transported to the site because these raw material types are not available locally within the Lynwood Quarry project area. They are, however, available in the Marulan area and were imported to the Lynwood Quarry region.

The overall archaeological significance was assessed as low although some sites were assessed as having moderate Aboriginal cultural significance and five sites were assessed as having very high Aboriginal cultural significance.

The report further concluded that the whole area was used by Aboriginal people and that areas of denser occupation were on the spur crests in the Deep Sands and in the Bindook Porphyry but only in areas protected from south-easterly winds; or on gentle slopes that are in close association with reliable water sources.

Four new sites were recorded during the investigation: one small artefact scatter and four scarred trees.

New South Wales Archaeology Pty Limited (2008) – AHIMS #101377

This report presents the results of an Aboriginal Archaeological Assessment consisting of an archaeological survey for proposed erosion control works on the ‘Hillview’ property off Rhyanna Road, and the ‘Roseview’ property south of Tarago. The ‘Hillview’ property is located approximately 20 kilometres north west of the current Project Area, and ‘Roseview’ is located approximately 48 kilometres south west.

A total of 15 Aboriginal sites were recorded within the project areas, with 12 sites being identified at Rhyanna Road and three at the Tarago proposal area. Approximately 753 stone artefacts were recovered, consisting of artefact scatters, low density artefact distributions, and isolated artefacts. The artefacts were manufactured from volcanic stone, quartz, brown silcrete, grey silcrete, translucent quartz, yellow chalcedony, quartzite, and chert.

Based on the analysis of the results of the field survey coverage, being 2.36% and 3.1% the ‘Hillview’ Property and ‘Roseview’ property respectively, and the fact that many exposed areas did not contain artefacts, the survey results determined that there is a low to low/moderate potential for intact archaeological deposits, with low/moderate archaeological sensitivity.

Navin Officer Heritage Consultants (1997) – AHIMS #102090

An archaeological survey was undertaken as part of an Aboriginal Archaeological Assessment for a mushroom substrate facility. This report and the following two reports are particularly relevant to the current assessment because the current Project Area falls within the northern section of the proposed mushroom substrate facility project area.

During the survey six new Aboriginal sites were recorded: one high density artefact scatter, two low density artefact scatters, and three isolated artefacts. The high density artefact scatter of more than 100 artefacts is found on the terraces and banks of Narambulla Creek in a highly eroded context cleared of vegetation. The authors concluded that the site is likely to be much larger but they were constrained by poor visibility in non-eroded areas. As part of the management plan for this site, a road that was originally planned to traverse the site was moved

250 metres to the northeast to avoid the area. The large range of artefacts and material types in the assemblage indicate the site was used for a short term by a large amount of people or for an extended period of time by a smaller number of people.

The lithologies present within the assemblage included chert, silcrete, quartz, indurated mudstone, and quartzite. There was high colour variation in the materials, especially in the silcrete and chert.

The artefact typologies in the assemblage included anvil/hammer stone, cores, blades, backed blades, flakes, flaked pieces, and chips. There was evidence of micro blade technology and some artefacts (blades and flakes) showed evidence of micro retouch along lateral edges. The size of artefacts ranged from 10 millimetres in length to 70 millimetres.

All sites in the area were assessed as having low scientific and archaeological significance due to the nature of the sites (open artefact scatters and isolated finds), which indicates the transient land use in the area by Aboriginal people.

Navin Officer Heritage Consultants (1997) – AHIMS #102091

The presence of mushroom ring features in the Project Area required additional investigation. Aboriginal groups advised that the growth of mushroom circles is often associated with bora rings (ceremonial grounds). It is believed that mushroom growth is prompted when the grounds are not danced on or maintained for a significant period of time. Malcom Freeman (Pjear LALC) advised that the type of mushroom may be “gold tops” and “could have hallucinogenic qualities that may have been used by Aboriginal people during ceremonies” (Navin Officer Heritage Consultants, 1997, p. 3). However, there is no oral history suggesting that the area was used for ceremonies by Aboriginal people in the past (Navin Officer Heritage Consultants, 1997, p. 5)..

The report does not support the association of the mushroom rings with Aboriginal values based on:

- The lack of any specific form of ground surface relief;
- The alignment of the mushrooms and associated features are irregular and do not show delineated and rounded arcs;
- A periodic outward growth of the rings is suggested by the crenate form of the rings;
- The two rings are nearly touching, which is rare for Aboriginal ceremonial grounds;
- The area has been subjected to forest clearance; the lack of known oral history;
- The shape of the rings suggests it was determined by some kind of biological downslope creep; and
- All of the recorded features are consistent with ‘fairy rings’, which are natural phenomena.

Navin Officer Heritage Consultants (2000) – AHIMS #102092

This report presents a management plan for the high density artefact scatter (MF4) found during the survey in 1997 for the proposed mushroom facility at Marulan (AHIMS report no. 102090).

The artefact scatter is located along Narambulla Creek and is considered to be very important for the Aboriginal community as a link to their ancestors and their past. Aboriginal groups expressed their wish to see the site preserved. The site is also considered significant for its scientific and archaeological value (relatively undisturbed, size, depth of deposit and the possibility of intact stratigraphy and range of artefacts and raw materials) and for its representativeness (the only large artefact scatter to be recorded away from the main riverine corridors).

The report recommends the following management strategies:

- Instigation of a revegetation program for the immediate creek banks;
- Temporary fencing of the creek banks and revegetation areas;
- Restricting or eliminating stock movement down to the creek in the area of the site;
- Continuing stock grazing on the unfenced sections of the site is appropriate provided stock levels remain low and do not pose an erosion threat; and
- No ploughing or cultivation should occur within the defined site area.

The site and its conservation requirements should be included on the Mulwaree Shire Local Environmental Plan, and a caveat or some other legal instrument on the land title. MF4 is not currently listed on the Mulwaree Shire Local Environment Plan 2009.

3.6 Discussion

Previous archaeological investigations within the Project Area have indicated that spur crests and slopes, particularly in the lower slopes of hills in areas protected from south-easterly winds, are most likely to contain archaeological material. These studies concluded that artefact scatters and isolated artefacts are the most likely site types within the Marulan region. It was determined that sites are typically located within close proximity to waterways

Most of the Aboriginal cultural heritage recovered from the area was identified to be indicative of transitory movement across the landscape, with low-moderate densities within most subsurface excavations. Areas of denser occupation were identified to occur on spur crests in deep sands or on gentle slopes that are in close association with reliable water sources (Umwelt Environmental Consultants, 2008).

Previous assessments indicated that the Project Area predominantly contains low archaeological potential. It is suggested that further subsurface investigations explore the recommended landforms of potential to provide comparable results. In this case, it is identified that crests, the lower slopes, and areas in proximity to waterways within the Project Area are most likely to contain Aboriginal cultural heritage material.

3.7 Predictive Model

This section provides a predictive model for the areas that would have been utilised in the past by Aboriginal people within the Project Area. The model is based on the information gathered regarding:

- Landscape context and landform units
- Ethno-historical evidence of Aboriginal land use
- Distribution of natural resources
- Results of previous archaeological work in the area
- Predictive modelling proposed in previous archaeological investigations.

The predictive model for sites within the Goulburn-Mulwaree region indicated the following elements which are pertinent for the Project Area:

- Stone artefact scatters and isolated artefacts are the most likely Aboriginal site types to be identified.
- The resources of study (flora, fauna, available water, i.e. Narambulla Creek) would have made the locality attractive to occupation and exploitation. However, resources would have been scattered and at a low density, and the locality was probably not economically self-contained. Base camps would not have been suitable for exploitation of those resources.
- Stone materials are not sourced within the area. Consequently, stone would have been conserved at camp sites.
- Sites are likely to occur on ridgelines, or on gentle slopes within proximity to a creek line.

4. Archaeological Survey

A field survey of the Project Area was undertaken from the 7 and 8 December 2021. Additional survey of the proposed Winfarthing Road and Hume Highway intersection works was undertaken on 11 September 2024.

The field survey sampling strategy, methodology and a discussion of results are provided below. The principle aims of the survey were to:

- Undertake a systematic survey of the Project Area targeting areas with the potential for Aboriginal heritage
- Identify and record Aboriginal archaeological sites visible on the ground surface
- Identify and record areas of potential archaeological deposits (PADs) that reflects preferred occupation sites on landforms features within the Project Area.

4.1 Archaeological Survey Methodology

The survey methods were intended to assess and understand the landforms and to determine whether any archaeological material from Aboriginal occupation or land use exists within the Project Area.

4.1.1 Sampling strategy

The archaeological survey was conducted on foot by a field team comprising RAPs and archaeologists. Records during the survey followed the archaeological survey requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water NSW, 2010) and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the Project Area during the survey;
- Landform elements, distinguishable areas of land approximately 40 metres across or with 20 metre radius (Speight 1998);
- GSV, distance visibility (DV) and areas of exposure;
- Survey coverage;
- Any resources that may have potentially have been exploited by Aboriginal people;
- Photographs of site indicating landform;
- Observable past and present disturbances to the landscape from human or animal activities; and
- Aboriginal artefacts, cultural modified trees or any other Aboriginal sites.

Distinguishing landform elements and their association with Aboriginal cultural heritage may help with the identification of site patterning, though with the awareness of the following limitations:

- The degree of GSV and amount of exposed areas can significantly bias the discovery of surface artefacts;
- Cultural material exposed on the surface is not necessarily representative of the potential extent of the site (either horizontally or vertically).

Information about the presence of potentially exploitable resources helps contribute to predictions of the Aboriginal sites that may occur within the Project Area.

Information about GSV, DV and areas of exposures help to provide a general indication of the effectiveness of the survey for identifying Aboriginal cultural heritage exposed to the surface. Observable disturbances are also considered when assessing the integrity of known or potential sites for an area.

The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

Where possible, identification of natural soil deposits within the Project Area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, GSV, and the recording of soil information for each survey unit where possible.

Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

The result of the field surveys are illustrated on Figure 4.1, including the survey units (SU) defined across the Project Area.

Survey Assumptions

A 'Project Area' polygon (that represents the area of assessment) was prepared for the project. The current Project Area includes the maximum construction footprint allowing provision for minor design changes should these be required.

4.1.2 Survey Constraints

The Project Area comprises approximately 950,000 square metres. The overall effectiveness of the survey for examining the ground for Aboriginal sites was varied as GSV and exposures were heavily influenced by landform. Typically visibility and exposures were greater on the undulating hills and upper slopes, while portions of the foot slopes were more heavily vegetated.

The ability to see more obtrusive potential cultural heritage features from a distance within the Project Area overall was considered to be low due to tree cover across a majority of the Project Area, with some areas that have been surveyed previously in archaeological reports now being overgrown. The presence of open woodland allowed for the easy identification of landforms and determination of areas of archaeological sensitivity. All the trees present within the Project Area were carefully inspected for any possible Aboriginal cultural scars.

Several new Aboriginal archaeological sites were recorded and associated areas of archaeological potential were noted during this survey where corresponding landforms might contain further subsurface material ie. ridge crests, break of slope or creek line floodplain.

4.1.3 Survey Coverage

The initial archaeological survey was conducted on 7 and 8 December 2021 with a field team of four overall individuals. On 7 December 2021, the weather was sunny and hot. On 8 December 2021, the weather was recorded as cold, overcast, and rainy. The survey team included:

- Dierdre Lewis-Cook (Archaeologist – Niche Environment and Heritage)
- Riley Finnerty (Archaeologist – Niche Environment and Heritage)
- Tyronne Bell (Thunderstone)
- Merekai Bell (Yurwong Gundana).

The team conducted a targeted pedestrian survey of the Project Area which focused on areas and features where Aboriginal cultural heritage was most likely to be found based upon the predictive model. Areas of erosional exposure and trees that appeared to be mature were carefully inspected.

The field survey participants walked majority of the Project Area in a total of 11 units, with the exception of the southwestern corner of the Project Area (refer to Figure 4.1). Areas of disturbance and mature, native vegetation were also targeted. The team did not walk-through overgrown areas considered to be unsafe. Aboriginal cultural heritage is highly unlikely to be identified in these areas from a direct walkover due to visibility limitations. Both Deirdre and Riley however did walk over the previously identified Aboriginal cultural heritage sites within the current Project Area.

The additional survey was undertaken on 11 September 2024 with a field team of three. The weather was warm and clear. The survey team included:

- Renée Regal (Senior Heritage Consultant- Regal Heritage)
- Chris Allister (PLALC)
- Ashley Croker (PLALC).

The field survey participants walked a total of two units during this additional survey of Winfarthing Road and the Hume Highway. The area was highly disturbed and no areas of potential were identified.

During both survey efforts, a photographic record of the Project Area was made using a camera. Field notes were taken that documented the various features of the Project Area, including the landforms, areas of ground exposure, slope, areas of archaeological potential associated with significant landform elements i.e. crests/creek line, and the location of surface Aboriginal cultural heritage material.

4.1.4 Survey Results

The Project Area is largely covered in trees comprising open woodlands and sclerophyll understory (refer to Plate 4.3). Visibility and exposure were quite high in the surveyed areas, with exception to the creek terrace which was noted to be overgrown with no surface visibility (refer to Plate 4.2).

The survey confirmed that the Project Area comprises of landforms that include slopes, crests, undulating hills, and a creek terrace which is located in proximity to Narambulla Creek. Due to previous ground disturbance and prior archaeological research within the region, few areas of archaeological potential were identified during survey. Landforms that were identified to be associated with archaeological potential were recorded on ridge crests, hill break of slopes and the creek line corridor. These areas also corresponded with previously recorded Aboriginal places, both of which were adjacent to vehicular access tracks (refer to Plate 4.1). The Project Area was largely assessed to have low archaeological potential. The ridge and creek terrace were assessed to have the highest archaeological potential, with a moderate-high potential.

Previous ground disturbance was noted within the Project Area including underground utilities with signage indicating fibre optic lines within a drainage line observed in survey unit (SU) 5 (refer to Plate 4.4). Further ground disturbance was noted in several SUs associated with access and vehicle tracks. Ground disturbance resulting from ants and various animals, such as kangaroos, is noted across all landforms within the Project Area (refer to Plate 4.7). Evidence of the stockpiling of sandbags, quarrying, tree logging, and sediment control was identified in transect 12 and 14 (refer to Plate 4.8).

The information recorded during the survey has been summarized by landforms (refer to Table 4.1).

Table 4.1 *Effective Survey Coverage – Landform Summary.*

Landform	Survey Units	Landform Area within Activity Area (approx.) (m ²)	Visibility (%)	Exposure (%)	Area Effectively Surveyed (m ²)	Area Effectively Surveyed (%)
Upper Slope	3, 8, 9	103,649	35	25	9,069	8.75
Lower Slope	4, 7, 10	136,123	30	35	14,415	10.59
Crest	6	110,476	45	30	14,914	13.50
Undulating Hills	0, 1, 2, 5, 11	395,032	45	90	159,988	40.50
Hume Highway road verge		17,600	45	50	3960	22.5



Plate 4.1 *The location of a potential archaeological deposit and the location of site #010, on the ridge crest of Shelley's Hill*



Plate 4.2 *Site #51-6-0096, facing east. Artefact scatter found in the eroding terrace south of Narambulla Creek with very low ground visibility*



Plate 4.3 **Survey Unit 2, facing west. The image demonstrates the open woodland vegetation that is typical across the Project Area**



Plate 4.4 **Survey Unit 5, facing south east into a drainage line. Signs indicating that there are buried fibre optic lines**



Plate 4.5 *Facing south east from Survey Unit 6, looking down the slope towards drainage line*



Plate 4.6 *Survey Unit 6, looking north at the slope of AHIMS #51-6-0094*



Plate 4.7 *Rocky outcrops and ants nest, facing south-east along the ridgeline. Very low ground visibility with high exposure*



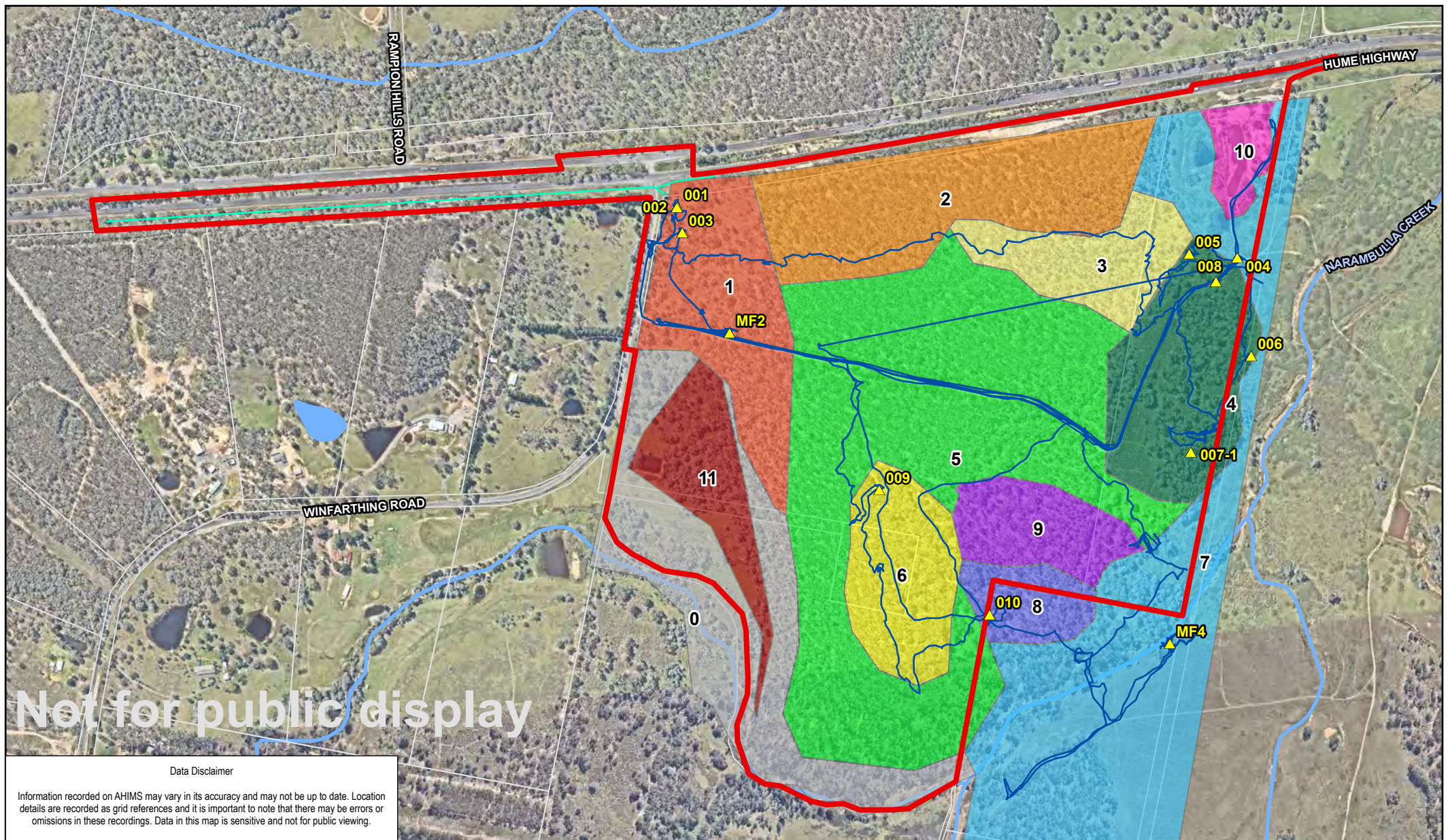
Plate 4.8 *General shot of the quarried area in the north-east of the Project Area, south of the Hume Highway*

4.1.5 Conclusions from the archaeological survey

Three of the previously recorded Aboriginal sites were relocated during survey, and seven sites were newly identified. All mature trees within the Project Area were inspected for cultural scarring. One tree was initially identified as a scarred tree but was determined to be a naturally scarred tree. A fragment of shell was recorded at Survey Unit 7, which raises the question for the potential for a subsurface shell midden, but no other evidence of middens was identified.

Thirty-eight (n=38) flaked stone artefacts were identified on the ground surface during the survey on hills crests, the ridge of Shelley's Hill, and within proximity to the waterway. These findings align with previous archaeological reports, in which Aboriginal cultural heritage is most likely to be located in close proximity to water sources and on the lower slopes. However, sites were additionally identified on hills crest and ridges, with the appearance of cultural material being washed down to lower slopes.

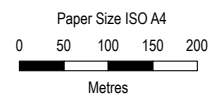
The survey concluded that there is potential for Aboriginal cultural heritage to be present within the Project Area. Due to the poor GSV within the Project Area, it is not possible to determine the nature, extent, and significance of the Aboriginal cultural heritage material without undertaking subsurface investigation.



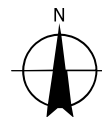
Legend

- | | |
|---|--|
| ■ Project Application Area | ■ Survey unit 1 |
| ▲ Surface stone artifact | ■ Survey unit 2 |
| — Original survey track | ■ Survey unit 3 |
| — Additional survey track - Sept 24 | ■ Survey unit 4 |
| | ■ Survey unit 5 |
| | ■ Survey unit 6 |

- | |
|--|
| ■ 7 |
| ■ 8 |
| ■ 9 |
| ■ 10 |
| ■ 11 |
| ■ 0 |
| Cadastre |



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Global Quarries
Marulan quarry
Archaeological Report

Project No. 2127708
Revision No. 0
Date 24/09/2024

Survey results

FIGURE 4.1

5. Archaeological test excavation

The Project Area has previously been assessed as demonstrating low archaeological sensitivity. Previous assessments (Navin Officer Heritage Consultants, 2000) have determined that the area is likely to contain evidence of use by Aboriginal people. There are several places within the Project Area that were identified during the previous survey with archaeological potential, these were determined to have moderate potential. These areas focused on the break of slopes on Shelley's Hill, on the ridge crest near the Trig Point, and in proximity to Narambulla Creek. Previous assessments (Umwelt Environmental Consultants, 2006; Umwelt Environmental Consultants, 2005; Umwelt Environmental Consultants, 2008; Navin Officer Heritage Consultants, 1997; Navin Officer Heritage Consultants, 1997; Navin Officer Heritage Consultants, 2000) have determined that the terrace of Narambulla Creek within the eastern portion of the Project Area is very important for local Aboriginal people. Furthermore, it was determined that crests in proximity to water sources, areas protected from south-easterly winds, and gentle slopes are likely to contain evidence of use by Aboriginal people. Typically, subsurface cultural material has been recovered in proximity to creeks, drainage lines, on gentle to lower slopes. In disturbed contexts cultural material is rarely identified (New South Wales Archaeology Pty Limited, 2008).

There have been several studies within the Marulan region that demonstrate preliminary data regarding the utilisation of the land by Aboriginal people. As the Project Area contains a large variation in landform types, it was determined that a targeted testing program would be most appropriate for subsurface excavation. The use of subsurface excavation enables the refinement of the predictive modelling for the Marulan area and allows for the assessment of the potential impact of the proposed alignment.

5.1 Aims of test excavation

In accordance with the Office of Environment and Heritage (OEH) Code of Practice, the aims of archaeological test excavation are:

- To adequately identify the extent and nature of subsurface archaeological deposits within the Project Area through the targeted excavation of representative landform contexts;
- Preliminary comparative analysis of test excavation results with the results of other subsurface archaeological investigations in the area;
- To assess the scientific significance of subsurface archaeological deposits within the Project Area following the assessment of test excavation results;
- To provide an opportunity for Registered Aboriginal Parties (RAPs) to comment on the Aboriginal cultural heritage values of the Project Area; and
- To provide the proponent with recommendations on future requirements of an Aboriginal Heritage Impact Permit (AHIP).

5.2 Excavation methodology

The test excavation methodology identified two testing areas within the Project Area. The following methodology will be followed for all the test pits to be excavated:

- Test pits must be excavated using hand tools only including spades, handle shovels, and trowels
- Test pits will be excavated in 50 x 50 centimetres units
- Test excavation units must be excavated to at least the base of the identified Aboriginal object bearing units and must continue to confirm the soils below are culturally sterile
- All material excavated from the test excavation units must be sieved using 3 millimetre aperture wire-mesh sieves
- All artefacts will be collected, bagged, and clearly labelled

- For each test pit that is excavated, the following documentation will be taken:
 - unique test pit identification number
 - GPS coordinate of each test pit
 - Munsell soil colour, texture and pH
 - amount and location of artefacts within the deposit
 - nature of disturbance where present
 - stratigraphy
 - archaeological features (if present)
 - photographic records
 - spit records.
- Test excavation units must be backfilled as soon as practical due to safety issues.

5.3 Aboriginal Objects

All Aboriginal objects retrieved during test excavation were washed and placed in re-sealable bags for further analysis and recording. Once test excavation was completed, the artefact assemblage was recorded and stored as outlined in the OEH Code of Practice.

Artefact analysis included the recording of key attributes, such as material, artefact type, platform type, termination type and dimensions, as well as a photographic record of representative artefacts. All artefacts were given a unique number and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in writing in each bag.

6. Results

6.1 Dates and personnel

Test excavation was conducted over seven days from the 28 February to 18 March 2022. The weather was a combination of sunny and overcast. The participants in the test excavations included:

- Carly Todhunter (Niche Environment and Heritage)
- James McGuinness (Niche Environment and Heritage)
- Vergilio Serra (Global Quarries Australia)
- Aryssa McAlister (Pejar LALC)
- John Carriage (Thoorga Nura)
- Bron Ireland-Bell (Thunderstone Aboriginal Cultural Services)
- Nicole Ireland-Vuacera (Thunderstone Aboriginal Cultural Services)
- Tyronne Bell (Thunderstone Aboriginal Cultural Services)
- Merekai Bell (Yurwang Gundana Cultural Heritage Services)
- Tim Stabbs (Yurwang Gundana Cultural Heritage Services)
- Steve Johnson (Corroboree Aboriginal Corporation)
- Todd Pintaric (Corroboree Aboriginal Corporation)
- Brenden Taylor (Murra Bidgee Mullangari)
- Hika Tekowhai (Walbunja).

The result from the test excavations are illustrated in Figure 6.1.

6.2 Soils, disturbances and features

6.2.1 Landform context

The Project Area comprises undulating hills consisting of Shelley's Hill and smaller hills within the Project Area, and alluvial plains associated with Narambulla Creek. The eastern boundary of the Project Area consists of the plains associated with the Creek. The Project Area is intercepted by Narambulla Creek and its tributaries within the eastern portion of the Project Area. This continues along the southern portion of the Project Area, consisting of slopes and creek terraces. The western portion of the Project Area consists primarily of undulating plains.

During subsurface excavation at the undulating plains, one of the test pits within the Project Area became waterlogged following rain. Excavation determined that the presence of seeping water occurred at a depth of approximately 230 millimetres. This was not observed within other test pits.

6.2.2 Disturbances

Land disturbance within the Project Area is largely attributed to bioturbation and vehicular use within the Project Area. There are no existing structures within the Project Area, with exception of the convict built trig station at the top of Shelley's Hill, and as such there is no evidence of significant ground disturbance.

6.2.3 Limitations

Subsurface testing was restricted to the area surrounding the Crown Land within the Project Area, as the permission for the purpose of excavation was unable to be obtained prior to the complex assessment.

Bad weather resulted in the soils being too wet to proceed with the original methodology of sieving. This change resulted in the switch from dry sieving to wet sieving so that complex assessment could proceed.

6.2.4 Soil Descriptions

6.2.4.1 Hill Crest (Quarry Footprint)

A total of six test pits were excavated within the Quarry footprint on the crest of Shelley's Hill. The soil profile was generally consistent across all test pits, consisting of a pale-mid greyish brown comprising of a clayey silty loam containing stone inclusions that were typically laterite. This overlaid a pale reddish brown clayey silt, also consisting of typically laterite stone inclusions. The final layer that was typically identified within these test pits was a pale yellow silty clay that was identified above a layer of compacted clay or degraded bedrock. The test pits were excavated to a depth between 230 to 400 millimetres, with most of the test pits reaching a depth of approximately 300 millimetres.

6.2.4.2 Undulating Plains

Very dark brown silty humic topsoil with grass root and shale pebble inclusions, typically overlying a brown silty loam clay. This second layer often included shale ranging from 6 to 80 millimetres in size, and sometimes including ironstone pebbles. It was noted that this layer would typically see a gradually increasing clay content as the soil was removed. This layer overlaid a yellowish or orange brown silty clay, with consistent shaley gravels. The test pits across this landform were excavated to a depth between 150 to 300 millimetres, with most of the test pits reaching a depth of approximately 300 millimetres.

6.2.4.3 Lower Slope

The soil profile within the lower slopes of the Project Area varied across all test pits. The first spit typically consisted of a silty loam that was dark in colour, varying between brown and grey. Often, this was located underneath a very fine layer of humic topsoil. Inclusions in the first layer comprised generally of gravels and tree/grass roots, with increasing amounts of laterite and shale as the gradient of the slope increased towards the mid slope. The second spit comprised of sandy or clayey silts, and included colours recorded as pale yellow, orange and yellow browns, brown, and very dark brown. Roots tended to continue to be identified within this spit, which typically reached a depth of approximately 200 to 250 millimetres. Spit 3 was more consistent across the landform, typically comprising brown silty clays that varied in shade from light to mid brown. At this stage, it was noticed that clays increased with depth, and was often wet in hydration. In total the test pits were excavated to a depth between 230 to 500 millimetres, with most of the test pits reaching a depth of approximately 400 millimetres.

6.3 Artefact Assemblage

The artefact assemblage from the Project Area consists of 40 stone artefacts retrieved from eighteen test pits. A total of 18 of the artefacts were recovered from three test pits within the footprint of the proposed quarry, 16 artefacts were recovered from the lower slopes of Shelley's Hill and the remainder of the artefacts were located within proximity to Narambulla Creek.

6.3.1 Hill Crest

The 18 artefacts recovered from within the footprint of the quarry were situated on the hill crest of Shelley's Hill, situated predominantly in the northern aspect of the hill crest. The artefacts located on the hill crest were recovered from a depth of 0 to 300 millimetres, with the highest frequency occurring in Spit 1 (0 to 100 millimetres). Of these, artefacts were predominantly recovered from TP6 and TP8.

The assemblage includes quartz, silcrete, and chalcedony. The assemblage consists of flakes, flake fragments, flaked pieces, and cores. Two artefacts exhibited evidence of retouch or use wear. Artefacts from the hill crest ranged in size between 7.8 millimetres and 36 millimetres in length, with the majority of the artefacts noted between 21 to 23 millimetres in size.



Plate 6.1 *Weathered silcrete flake fragment identified in TP6, showing evidence of use wear/retouch*

6.3.2 Undulating Plains

The 16 artefacts recovered from the undulating plains associated with Narambulla Creek which borders the eastern and southern aspect of the Project Area. The artefacts within this landform were recovered from a depth range of 0 to 400 millimetres, with the highest frequency occurring in Spit 1 (0 to 100 millimetres), and a similar number in Spit 2 (100 to 200 millimetres). The artefacts were recovered from nine test pits and were evenly distributed.

The assemblage includes quartz and silcrete, and consists of flakes, flake fragments, flaked pieces, and blades. No artefacts exhibited evidence of retouch or use wear. Artefacts ranged in size between 5.5 millimetres and 25.7 millimetres in length, with the majority noted between 12 to 15 millimetres in size.

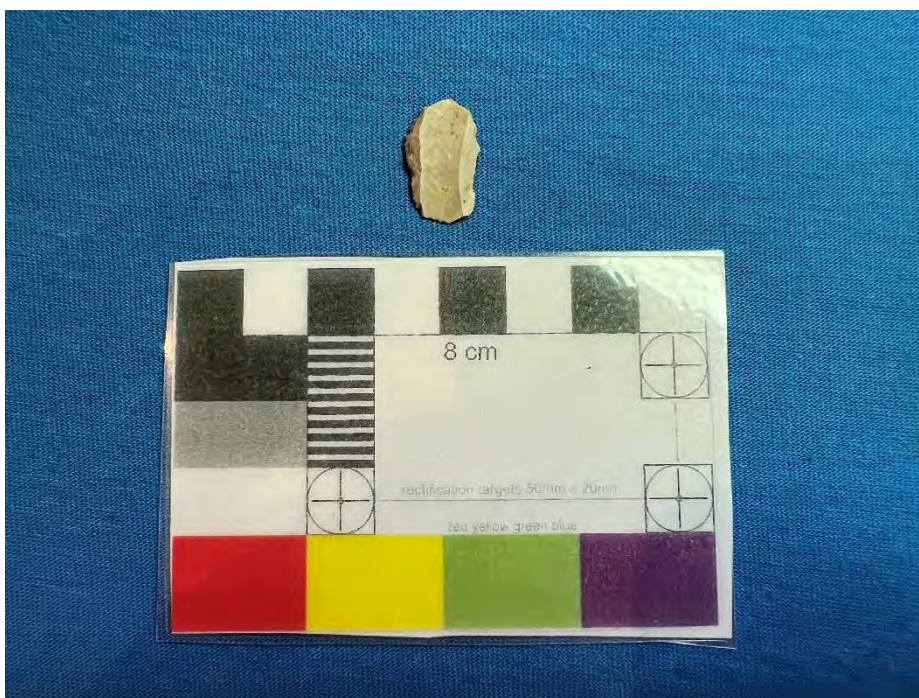


Plate 6.2 *Silcrete blade fragment (distal) recovered from TP17*

6.3.3 Lower Slope

A total of six artefacts were recovered from six test pits within the lower slopes of Shelley's Hill. The artefacts from this landform were recovered from a depth range of 0 to 500 millimetres, with the highest frequencies occurring in both Spit 1 (0 to 100 millimetres) and Spit 2 (100 to 200 millimetres).

The assemblage is manufactured from quartz and silcrete, and consists of a flake, flake fragments, and two cores. One artefact exhibits evidence of retouch of usewear. Artefacts range in size between 8.6 millimetres and 45.2 millimetres in length, with the majority of artefacts noted between 11-34 millimetres in size.



Plate 6.3 *Silcrete unidirectional core with one scar recovered from TP39*

Table 6.1 Test pit logs from subsurface excavation

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP1	765533E 6150684N	50	Firm/friable dark grey brown silty gravels. Laterite.	
		100	Firm/friable dark grey brown silty gravels. Laterite.	
		150	Firm/friable dark grey brown silty gravels. Transitions into yellow brown silty clay/sandy clay with gravels.	
		200	Loose pale yellow brown silty clay with gravels.	
		250	Wet, loose pale yellow brown silty clay and gravels.	
		300	Wet, loose pale yellow brown silty clay and gravels.	
		350	Wet, loose pale yellow brown silty clay and gravels.	
		400	Wet pale yellow brown silty clay with iron rich stone/gravels.	
TP2	765490E 6150669N	100	Loose very dark grey clayey loam with regular tree & grass roots and leaf litter. 10YR 3/1.	
		200	Friable very dark grey silty clayey loam with regular leaf litter, transitioning to pale brown silty loamy clay, and then brown sandy clay with orange clay inclusions. Shale, laterite, and root inclusions.	
		300	Compact brown sandy clay with some orange staining. Shale, laterite, root, and large tree root (SE corner) inclusions.	
		400	Compact brown clay with regular shale pebbles. No sand present from ~330 mm onwards. Shale/laterite, tree roots and orange staining inclusions.	
TP3	765574E 6150707N	100	Loose/friable pale grey brown gravelly organic silt onto clay silt. Increasingly pale and yellow. Stone inclusions of laterite, slate, and occasionally an iron-rich quartzite.	
		200	Loose/friable pale grey brown gravelly organic silt onto fine pale yellow grey clayey silt. Stone inclusions of laterite, slate, and occasionally an iron-rich quartzite.	
		270	Increasingly firm fine pale yellow grey clayey silt onto iron-rich clay silt and laminated rock at base.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP4	765605E 6150720N	100	Loose very dark grey topsoil with leaf litter, onto dark greyish brown clayey loam. Laterite and root inclusions.	
		200	Friable dark greyish brown clayey loam, onto light yellowish brown loamy clay. Laterite and root inclusions with orange staining.	
		300	Compact light yellowish brown loamy clay, with charcoal, roots, laterite and degraded bedrock inclusions.	
		350	Compact light yellowish brown loamy clay with frequent degraded bedrock, roots, laterite, and some orange staining.	
TP5	765638E 6150739N	10	Loose/friable stony silt with coarse gravels. Mid grey brown silt. 50-80 mm fractured laterite inclusions.	
		200	Loose stony silt with coarse gravels. Mid grey brown silt. Homogenous deposit with slight leaching through the profile. 50-80mm fractured laterite throughout, with 60% stony materials.	
		300	Loose, dry, increasingly pale yellow brown silt with fine gravels and large stones. Quartz angular gravel inclusions.	
		400	Loose, dry, increasingly pale yellow brown silt onto large stony obstructed base – decomposing bedrock.	
TP6	765536E 6151040N	100	Friable dry gravelly, clay silt, with pale grey brown predominantly sedimentary, iron rich gravels.	
		200	Loose pale reddish brown gravelly silty clay.	
		230	Firm to compact 10YR 6/2 clay silt onto undulating reddish yellow compact clay. Predominantly the reddish clay base immediately into Spit 3. Contained many naturally fragmented gravels of quartzite and silcrete.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP7	765493E 6151034N	100	Loose/friable very dark brown clayey silty loam with frequent tree root and laterite/shale inclusions.	
		200	Loose pale brown sandy clayey loam with tree root, iron flecks, and shale/laterite inclusions.	
		300	Loose to compact orange brown silty loamy clay with tree roots, iron flecks, shale/laterite, and degraded bedrock inclusions.	
TP8	765510E 6150994N	100	Friable humic clay silt onto pale clay silt. Possible limestone inclusions.	
		200	Loose/friable pale clay silt with degraded limestone inclusions.	
		300	Loose to compacted pale clay silt onto stony clay with decomposing limestone.	
TP9	765899E 6151038N	50	Loose very dark brown (10YR 3/2) silty loam topsoil with tree root inclusions.	
		100	Loose brown (10YR 5/3) silty loamy clay with shale, tree roots, iron stone, and angular grey gravel inclusions.	
		150	Firm light yellowish brown loamy clay with larger shale pebble and tree root inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
		200	Firm light yellowish brown (10YR 6/4) loamy clay, with increasing clay towards base. Inclusions of larger shale pebbles and tree roots.	
TP10	765895E 6151089N	100	Friable thin humic a horizon over pale grey silt with mottling.	
		200	Friable pale yellow brown (10YR) gravelly clay silt/sandy silt. Ironstone and quartz gravels >20 mm.	
		300	Loose pale yellow brown gravelly clay silt/sandy silt onto gravelly silty clay.	
		400	Firm pale yellow brown gravelly silty clay becoming and indurated with iron rich gravels.	
TP11	765891E 6151126N	100	Friable pale brown humic silty topsoil becoming an orange brown sandy silty clay. Inclusions of roots and shale pebbles.	
		200	Friable orange brown sandy silty clay. Inclusions of roots, iron manganese flecks, orange clay flecks and shale pebbles.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
		300	Friable to compact orange brown silty clay with increasing clay towards base. Root, iron manganese flecks, orange/clay flecks and shale pebble inclusions. Shallower on the southern side.	
TP12	765896E 6151172N	100	Friable mid brown loamy clay onto yellow brown sandy clay. Fine tree and grass roots, and gravel inclusions.	
		200	Loose wet yellow brown (10RY 7/2) sandy clay with pH 6. Inclusions of larger tree roots (>20mm), and gravels (>20mm).	
		250	Yellow brown sandy clay. Groundwater present from 230 mm. End of excavation due to water.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP13	766127E 6151408N	50	Loose very dark brown silty humic top soil with grass roots and shale pebble (0-4 mm) inclusions.	
		100	Firm brown silty loamy clay with shale pebbles (2-60 mm).	
		150	Firm brown silty loamy clay with shale pebbles (2-60 mm).	
TP14	766139E 6151419N	100	Loose very dark brown silty loamy topsoil with leaf litter and grass root inclusions.	
		200	Firm brown silty loamy clay with shale (2-80 mm) inclusions.	
		300	Firm brown silty loamy clay with shale (2-80 mm) inclusions.	
		400	Firm brown silty loamy clay, increasing in clay towards base with shale (2-80 mm) inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP15	766121E 6151382N	100	Loose very dark brown silty humic topsoil with grass root and shale pebble inclusions.	
		200	Firm dark brown loamy clay with shale and grass root inclusions.	
		250	Firm dark brown loamy clay with shale and grass root inclusions.	
TP16	766134E 6151399N	100	Loose very dark brown silty humic topsoil with shale pebble (≤ 4 mm).	
		190	Firm brown silty loamy clay, with increasing clay and shale pebble (2-40 mm) inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP17	766148E 6151428N	100	Loose dark brown (10YR 3/3) silty loamy clay with grass root and shale inclusions.	
		200	Firm dark reddish brown (5YR 4/2) silty loamy clay with shale and iron stone pebble inclusions.	
		300	Firm reddish brown (5YR 4/6) loamy clay with shale and iron stone pebbles.	
TP18	766116E 6151395N	100	Loose brown silty loamy topsoil with shale and grass root inclusions.	
		200	Firm orange brown silty loamy clay with shale inclusions.	
		250	Firm orange brown silty loamy clay with shale inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP19	766163E 6151439N	100	Loose brown silty loamy topsoil with grass root and shale inclusions.	
		200	Firm reddish brown loamy clay with grass root and shale inclusions.	
TP20	766129E 6151247N	100	Loose dark brown humic topsoil transitioning to light brown loamy clay with grass and tree root, and shale pebble inclusions.	
		200	Firm orange brown slightly loamy clay with root and shale pebble inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP21	766130E 6151288N	100	Loose brown loamy clay with shale cobble/pebble inclusions.	
		200	Firm light brown clay with shale pebble inclusions.	
TP22	766144E 6151323N	100	Loose very dark brown humic topsoil with grass and tree root, and shale inclusions.	
		200	Firm greyish brown loamy clay with tree root and shale inclusions.	
		300	Firm brown loamy clay, some sand, and increasing in clay towards base. Shale cobble (≤120 mm) inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP23	766113E 6151329N	700	Friable brown clay loam with iron rich shaley gravel (>10 mm) inclusions.	
		130	Firm yellow brown (10YR 5/3, pH 6) with root and iron rich gravel (>40 mm) inclusions.	
		300	Compact yellow brown (10YR 6/3, pH 6) silty clay.	
TP24	766080E 6151353N	100	Loose dark brown humic topsoil with grass root and shale pebble inclusions.	
		200	Firm orange brown loamy clay, with increasing clay towards base and shale pebble (1-40 mm) inclusions.	
TP25	766071E 6151301N	100	Loose grey brown silty loamy topsoil with regular grass and tree root, and gravel inclusions.	
		200	Firm orange brown loamy clay with grass, tree root, shale, and other gravel inclusions.	
		280	Firm orange brown loamy clay with shale gravel, grass, and tree root inclusions.	
TP26	766065E	100	Friable dark brown silty topsoil with shale and grass root inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
	6151276N	200	Firm brown silty loamy clay with some charcoal in infilled channel, shale, and grass root inclusions.	
		300	Firm orange brown loamy clay with increasing clay towards base. Shale and grass root inclusions, with some charcoal in infilled channel.	
TP27	766091E 6151219N	60	Firm brown (7.5YR 4/3) clay loam with ironstone and shaley gravel (>20 mm) inclusions.	
		160	Firm, with a sharp contrast onto paler brown (7.5YR 5/2) silty clay with shaley gravels.	
		270	Thin (<70 mm) spit into brown (7.5YR 5/2) clay.	
TP28	766043E 6151427N	100	Brown loamy topsoil with shale pebbles and grass and tree root inclusions.	
		200	Pale greyish brown loamy clay with shale pebble and grass and tree root inclusions.	
		240	Orange brown loamy clay with increasing clay towards base.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP29	766024E 6151452N	200	Greyish brown loamy clay topsoil with regular tree and grass root inclusions.	
		230	Firm yellowish brown loamy clay with increasing clay towards base, and regular inclusions of tree and grass roots.	
TP30	766024E 6151508N	100	Dark brown loamy topsoil with grass roots, tree roots, and shale pebbles.	
		200	Firm orange brown clay loams with shale pebble / cobbles, tree and grass root inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP31	766027E 6151547N	200	Firm brown loamy clay with shale pebbles and tree and grass root inclusions.	
		230	Firm yellowish brown loamy clay with increasing clay towards the base. Inclusions of shale pebbles and tree and grass roots.	
TP32	766039E 6151590N	100	Firm brown loamy clay transitioning to a yellowish brown loamy clay. Inclusions of grass and tree roots, and shale pebbles and cobbles.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP33	766037E 6151638N	100	Firm brown loamy clay with shale pebble, grass and tree root inclusions.	
		200	Firm orange brown loamy clay with increasing clay towards base. Inclusions of shale pebbles (1-40 mm) and grass and tree roots.	
TP34	766109E 6151632N	70	Firm gravelly dark greyish brown (10YR 4/2) silty clay and inclusions of shale, quartz gravels, and grass roots.	
		170	Mottled pale brown (10YR 4/3) silty clay with gravels.	
		250	40-90 mm mottled pale brown silty clay.	
TP35	765999E 6151275N	80	Firm mid brown clay loam, with degrading shaley sandstone at base of spit.	
		210	Firm brown (10YR 5/3) silty clay with bioturbated flecks from topsoil and frequent degrading shaley sandstone (>20 mm).	
		270	Compact light brownish grey (10YR 6/2) silty clay with clay at the base of the excavation at 270 mm.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP36	766011E 6151310N	180	Mid brown (10YR 5/2) sandy clay.	
		200	Pale brown (10YR 6/3) clay.	
TP37	766018E 6151008N	100	Friable mid brown clay loam with shaley gravels and ironstone (>60mm) inclusions.	
		150	Friable mid brown clay loam with increasing yellow brown silt content and gravel inclusions.	
		250	Friable to firm yellow brown (10YR 4/3) clay silt.	
		280	Yellow brown (10YR 4/3) clay.	
TP38	766095E 6151173N	30	Thin O horizon with mid brown clay loam onto (10YR 5/2) sandy loam. Inclusions of shaley sandstone gravels (>20 mm).	
		120	Firm brown (10YR 5/3) sandy clay with larger shale (>40 mm) inclusions.	
		230	Compact pale brown (10YR 6/3) clay with shaley gravels. End of excavation at 260 mm.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP39	766079E 6151058N	30	Loose dark brown silty loamy topsoil with tree root and mixed gravel inclusions.	
		250	Loose to firm brown silty clay loam with regular dark black mixed gravel and tree root inclusions.	
		520	Firm light brown loamy clay with increasing clay at base. Mixed gravel with mineral accretion, shale, a quartz intrusion conglomerate, and tree root inclusions.	
TP40	766068E 6151038N	100	Friable mid-brown clay loam topsoil with gravel and grass root inclusions.	
		200	Firm brown sandy silty loam with increasing gravel inclusions.	
		300	Firm brown sandy clay transitioning to loamy clay with shale (>40 mm) and mixed gravel inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP41	766066E 6151018N	50	Friable mid brown (7.5YR 4/3, pH 5.5) clay loam with gravel inclusions.	
		160	Friable mid brown clay loam, transitioning to sandy silt at 170 mm with gravel inclusions.	
		310	Compact brown (7.5YR 5/3) sandy silt with ironstone and shale gravel inclusions.	
		400	Compact brown (7.5YR 5/4) sandy clay.	
TP42	766064E 6150998N	90	Friable dark brown (7.5YR 5/2) clay loam topsoil with frequent inclusions of grass roots, and ironstone and shaley gravels.	
		160	Friable dark brown (7.5YR 5/2) clay loam with increasingly large sand grains in sandy silt. Frequent inclusions of grass roots, and ironstone and shaley gravels.	
		300	Friable dark brown (7.5YR 5/2) clay loam with increasingly large sand grains in sandy silt. Frequent inclusions of grass roots, and ironstone and shaley gravels.	
		510	Friable dark brown (7.5YR 5/2) clay loam with increasingly large sand grains in sandy silt onto compact sandy clay. Large shale inclusions where present.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP43	765768E 6151231N	120	Firm very thin brown topsoil leading clearly to a light yellowish brown loamy clay. Regular shale pebbles and some staining with tree root inclusions.	
TP44	765779E 6151180N	50	Loose very dark brown (7.5YR 2.5/1) sandy loamy topsoil with shale pebble and tree root inclusions.	
		100	Loose very dark brown sandy loamy topsoil.	
		150	Firm light brown (7.5YR 6/4) loamy clay with increasing shale and tree root inclusions.	
		200	Firm light brown (7.5YR 6/4) loamy clay with increasing clay content, and increasing shale and tree root inclusions.	
		250	Firm strong brown (7.5YR 6/4) clay with shale pebbles and some tree root inclusions.	
TP45	765781E 6151129N	100	Loose dark brown loamy topsoil with regular tree roots, leaf litter, and shale pebble inclusions.	
		200	Firm orange brown loamy clay with increasing clay and shale and tree root inclusions.	
		260	Firm orange brown loamy clay transitioning to higher clay content towards the base and shale pebble inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP46	765793E 6151092N	100	Loose dark brown loamy topsoil with shale and tree root inclusions.	
		200	Firm brown loamy clay with shale pebble and tree root inclusions.	
		300	Firm brown loamy clay with increasing clay content towards the base and increasing shale (<60 mm) inclusions.	
TP47	765764E 6151009N	100	Loose dark brown (7.5YR 3/2) humic loamy topsoil with regular tree root and shale pebble inclusions.	
		200	Firm orange brown loamy clay with shale pebble and cobble inclusions.	
		230	Firm orange brown loamy clay with shale pebble and cobble inclusions.	

TP	Co-ordinate	Depth (mm)	Soil Description	Photo
TP48	765803E 6151049N	100	Loose dark brown loamy topsoil with shale pebble and tree root inclusions.	
		200	Firm orange brown loamy clay with shale and tree root inclusions.	
		290	Firm strong brown clay with tree root, shale pebble and cobble inclusions.	
TP49	765795E 6151001N	100	Loose dark brown loamy topsoil with shale pebble and tree root inclusions.	
		200	Firm brown loamy clay with slate pebble and cobble inclusions.	
		290	Firm orange brown loamy clay with shale cobble and pebble inclusions.	

7. Analysis and Discussion

7.1 Archaeological Analysis

There are three previously recorded Aboriginal archaeological sites within the Project Area as shown on Figure 3.3. These sites include MF1 (AHIMS 51-6-0093), MF3 (AHIMS 51-6-0094), and MF2 (AHIMS 51-6-0095). As a result of the current testing, the extent, nature, and significance were determined and updated for MF1 and MF2. An additional seven Aboriginal archaeological sites were identified during the testing and the extent, nature and significance was determined and assessed (refer to Figure 7.1). Aboriginal sites no longer within the current Project Area have been excluded from the following analysis, however all information relating to these sites has been updated on the AHIMS register.

Table 7.1 *Aboriginal Archaeological Sites updated and recorded in the Project Area*

Site name and AHIMS number	Features	Landform	Condition	No. of artefacts from current testing	Total No. of Artefacts to date
MF1 51-6-0093	Artefact Scatter	Broad shallow saddle	Disturbance from grading and cattle grazing.	1	2
MF3 51-6-0094	Artefact Scatter	Floodplain	Disturbance along creek corridor	-	2
MF2 51-6-0095	Artefact Scatter	Broad shallow saddle	Disturbance from access track.	1	2
Narambulla AFS1 51-6-0918	Artefact Scatter	Hill Crest	Good	19	19
Narambulla AFS2 51-6-0919	Artefact Scatter	Lower slope	Good	3	3
Narambulla AFS3 51-6-0920	Artefact Scatter	Floodplain	Good	45	45
Narambulla AFS4 51-6-0921	Artefact Scatter	Ridgeline	Good	5	5
Narambulla IA1 51-6-0926	Isolated Artefact	Ridgeline	Good	1	1
Narambulla IA2 51-6-0916	Isolated Artefact	Ridgeline	Good	1	1
Narambulla IA3 51-6-0917	Isolated Artefact	Lower Slope	Good	1	1

7.1.1 MF1 (AHIMS #51-6-0093)

MF1 (AHIMS #51-6-0093) was originally comprised of a single surface isolated find (quartz flake) recorded by Navin Officer Heritage Consultants in 1998. It was identified during a cultural heritage survey in a broad shallow saddle on a track which had been previously disturbed by the laying of a fibre optic cable. MF1 is located within a broad shallow saddle in woodland dominated by white gum and Argyle apple, approximately 90 metres east of a first order tributary that empties into Narambulla Creek 500 metres to the north. The saddle was considered to have higher potential for the artefacts to be present.

During the 2021 survey a further artefact (single fine-grained silcrete core) was recorded bringing the total number of recovered artefacts to date is two. All the artefacts were identified during field survey in 1998 and 2021 are from a surface context.

The second artefact located in a very disturbed area which has been previously subjected to grading, and low levels of grazing. It is unlikely to that the artefact is located *in situ*. A scarred tree was identified within the extent of the Aboriginal site. The scarred tree was identified to comprise of a Eucalyptus which was alive at the time of recording. The scar was measured at 2.2 metres x 60 centimetres. The depth of the scar is approximately 30 centimetres and is believed to be unlikely be a culturally modified tree due to the absence of visible tool marks, and the scar reaching the ground. Considering that the area is at low relief with no close supply of reliable water, it is most likely that the area has not been used for long-term occupation. This site represents short term occupational deposits resulting most likely from people traversing the Project Area on the way to more suitable camping grounds. This site will be amended to be defined as an artefact scatter.



Plate 7.1 **Site 51-6-0093, facing west**



Plate 7.2 *Potential Culturally Modified tree (not registered)*



Plate 7.3 *Silcrete core recovered from site 51-6-0093*

7.1.2 MF3 (AHIMS #51-6-0094)

MF3 (AHIMS #51-6-0094) is a low density artefact scatter recorded Navin Officer Heritage Consultants in 1998. It was identified during a cultural heritage survey on the edge of an area of cleared pasture, with the adjacent area consisting of closed woodland vegetation and heavy leaf litter on the ground. MF3 is located on a mid-slope of a minor spur above a first order tributary that drains into Narambulla Creek approximately 260 metres to the east. During field survey, two flakes were located, one silcrete and one quartzite. It was considered that there was potential for further archaeological material to be present across similar landforms within the region, with the site distribution model finding that lesser sites will be associated with minor streams. It was noted that the site does not represent a rare or unusual artefact. This site was determined to have low archaeological potential due to its limited artefactual materials and the potential for numerous other sites of this type to be located in the area (Navin Officer Heritage Consultants, 1997). No further artefacts were identified within MF3 during the 2021 survey.

MF3 is located within an open woodland where agricultural clearing has taken place. It is likely that cultural material will have been gone through some vertical and horizontal displacement and is unlikely to be *in situ*. The area would have provided dry higher ground for camping and with a reliable water source within 260 metres to a tributary associated with Narambulla Creek, it is most likely that the area has been used for short-term occupation, as a good vantage point or a passing corridor. The site represents small density occupational deposits resulting most likely from short-term camping and represents remnants of people traversing the Project Area on the way to more suitable camping grounds.



Plate 7.4 Site 51-6-0094, facing north

7.1.3 MF2 (AHIMS #51-6-0095)

MF2 (AHIMS #51-6-0095) is an isolated artefact recorded Navin Officer Heritage Consultants in 1998 as an isolated find. It was identified during a cultural heritage survey in a broad shallow saddle in a cleared gravelly area approximately 240 metres south of a first order tributary that drains into Narambulla Creek approximately one kilometre to the north east. During field survey, one high quality quartz core on a mid-slope on a low ridge overlooking the drainage line was identified in a surface context. One additional possible artefact was located close by. However, through careful inspection and analysis, it was confirmed that it was not artefactual as there were no diagnostic features present. It was considered that there was potential for archaeological material to be present across similar landforms within the region, with the site distribution model finding that lesser sites will be

associated with minor streams. It was noted that the site does not represent a rare or unusual artefact, but it does demonstrate raw material that was transported to the site (Navin Officer Heritage Consultants, 1997).

MF2 is located on a very gentle slope within a saddle. The total number of recovered artefacts to date is two, changing its classification from an isolated artefact to an artefact scatter. Both artefacts were identified through field survey in 1998 and 2021 from a surface context.

The artefact from the current testing consisted of a grey silcrete proximal flake with quartz inclusions. The area was identified to be eroding, whilst being impacted by a roadway. The artefact was identified in an area that was recorded as being comprised of open woodland and was initially devoid of vegetation and leaf litter. Considering that the area has been affected by the construction of an access road, cultural material will have gone through some vertical and horizontal movements and is unlikely to be *in situ*. The area would have provided dry higher ground for camping but considering that the reliable water supply is located approximately one kilometre away, it is most likely that the area has not been used for long-term occupation, rather that it was utilised as a good vantage point or as a pathway. The site represents small density occupational deposits resulting most likely from short-term use and represents remnants of people traversing the Project Area.



Plate 7.5 **Site 51-6-0095, facing south-east. Access route and clearing visible**



Plate 7.6 Silcrete proximal flake from site 51-0-0095

7.1.4 Narambulla ASF1 (AHIMS #51-6-0918)

Narambulla ASF1 (AHIMS #51-6-0918) is an artefact scatter identified during the test excavations within the hill crest landform. Artefacts were recovered from TP6 and TP8. Due to the distance between these two sites, it is considered that they represent different events.

Narambulla ASF1 is located approximately 157 metres from a first order drainage line that empties into Narambulla Creek to the east. This drainage line is ephemeral as such it would not have provided reliable source of water. Seventeen artefacts were recovered from two test pits. Artefacts were manufactured from silcrete and chalcedony, and consisted of flakes (two complete, three distal, five medial, and one proximal), cores (one bifacial and one unidirectional), and angular fragments. All artefacts were recovered from very dark brown friable clayey silts and sandy silts. A yellowish red clay base is encountered at the depths 220 millimetres, or a base of stony clay with decomposing limestone at a depth of 300 millimetres. These soils correspond to *Yellow Podzolic Soils*, strongly differentiated duplex soils that are dominated by the accumulation of compounds of organic matter, aluminium and/or iron. Due to the erosional nature of the soils, it is most likely that recovered artefacts are not *in situ*. The site represents small density occupational deposits resulting most likely from short-term camping and represents remnants of people traversing the Project Area on the way to more suitable camping grounds.



Plate 7.7 *Site 51-6-0918, facing south*



Plate 7.8 *Silcrete core recovered from site 51-6-0918*

7.1.5 Narambulla ASF2 (AHIMS #51-6-0919)

Narambulla ASF2 (AHIMS #51-6-0919) is an artefact scatter identified during the test excavations on the lower slope landform. Artefacts were recovered from TP9, TP11, and TP12. Due to the distance between these two sites, it is considered that they represent separate events.

Narambulla ASF2 is located 70 metres north from a first order drainage line that empties into Narambulla Creek to the east. This drainage line is ephemeral and holds water during the prolonged periods of heavy rain. As such it would not have provided reliable source of water. Three artefacts were recovered from three test pits including two

quartz flakes (one distal and one longitudinally split flake), and a complete silcrete flake. Two of the artefacts were recovered from the top 100 millimetres of soils, comprising of a dark brown silty loam. The remaining artefact was recovered from depths between 40 to 50 millimetres, comprising light yellowish brown loamy clay. Soil stratigraphy within Narambulla ASF2 corresponds to the soil stratigraphy present within Narambulla ASF1. An orange brown silty clay with increasing clay at depth towards base was encountered at the depths of between 200 to 280 millimetres. Decomposed bedrock was not encountered within these test pits. These soils correspond to *Yellow Podzolic Soils*, strongly differentiated duplex soils that are dominated by the accumulation of compounds of organic matter, aluminium and/or iron. Due to the erosional nature of the soils, it is most likely that recovered artefacts are not *in situ*. The area would have provided dry, higher ground for camping, but considering that the reliable water supply is not within close proximity, it is most likely that the area has not been used for a long-term occupation, but more likely for foraging activities, as a good vantage point or a passing corridor. The very low density of artefacts within the site indicates that the site is the remnant of most likely people traversing the area and can be characterized as a 'background noise' of the people's activities in the wider regions.



Plate 7.9 **Site 51-6-0919, facing south east**

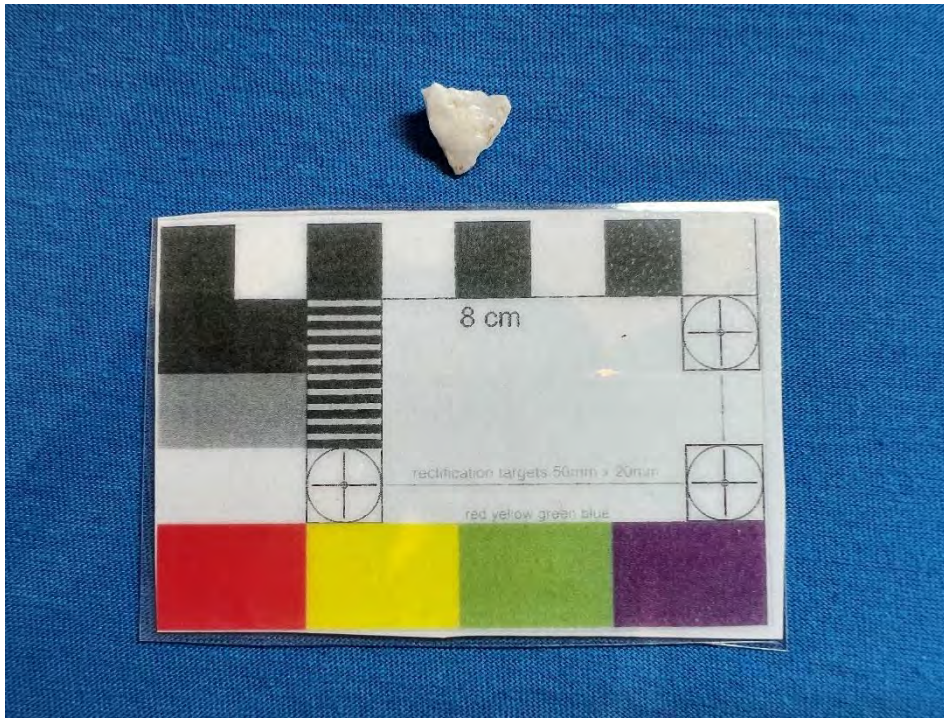


Plate 7.10 Quartz flake recovered from site 51-6-0919

7.1.6 Narambulla ASF3 (AHIMS #51-6-0920)

Narambulla ASF3 (AHIMS #51-6-0920) is an artefact scatter identified during field survey and test excavations on the plains landform and is located approximately 200 metres east of Narambulla ASF2. Due to the distances between these two sites, it is considered that they represent separate events.

Narambulla ASF3 is located adjacent to the western boundary of Narambulla Creek which is a permanent waterway, and as such is a reliable source of water. A total of 45 artefacts were recovered from a surface and subsurface context, across ten test pits. Artefacts were recovered from TP13, TP14, TP15, TP17, TP19, TP23, TP26, TP37, TP39, and TP42. The artefacts were predominantly manufactured from quartz and silcrete, with a single artefact manufactured from tuff. One shell was additionally recorded at the site. The artefacts consisted of flakes (14 complete, two distal, and two longitudinal flakes), flaked pieces, cores, blades, and angular fragments. All artefacts were recovered from a depth between 0-400 millimetres, with the soil layers typically being very dark to dark brown silty loams with shale and ironstone gravels and increasing clay towards depth. The soils tended to transition towards yellow or orange brown loamy clays with shale and decomposed shale bedrock to the depth of the excavations, up to 400 millimetres. These soils correspond to the *Yellow Earths*, which generally have a sandy to loamy surface soil and transition to porous sandy-clay subsoils. Due to the high erosional nature of the soils, it is most likely that recovered artefacts are not *in situ*. The density of the artefacts within the site indicates that the site is the remnant of short-term camping and foraging activities.



Plate 7.11 *Site 51-6-0920, facing south*



Plate 7.12 *Artefact recovered from site 51-6-0920*

7.1.7 Narambulla ASF4 (AHIMS #51-6-0921)

Narambulla ASF4 (AHIMS #51-6-0921) is an artefact scatter identified during the field survey on a very gentle slope of the ridge landform of Shelley's Hill located approximately 135 metres to the north-east of Narambulla IA2. Due to the distances between these two sites, it is considered that they represent separate events.

Narambulla ASF4 is located 200 metres north west of Narambulla Creek. Narambulla Creek is a perennial waterway, and as such would have provided a reliable source of water. Five artefacts were recovered from a surface context. The artefacts consisted of four quartz flakes and a silcrete flake. The area in which it was found

consisted largely of open woodland with leaf litter, resulting in visibility and exposure of >20%. Due to the location of the artefact and land use by local fauna, it is most likely that recovered artefacts are not *in situ*. The low density of artefacts within the site indicates that the site is the remnant of most likely people traversing the area. The site represents small density occupational deposits resulting most likely from short-term camping and represents remnants of people traversing the Project Area on the way to more suitable camping grounds.



Plate 7.13 **Site 51-6-0921, facing south east**



Plate 7.14 Silcrete flaked artefacts recovered from site 51-6-0921

7.1.8 Narambulla IA1 (AHIMS #51-6-0926)

Narambulla IA1 (AHIMS #51-6-0926) is an isolated find identified during the test excavations on the ridgeline landform which is located approximately 120 metres to the south-east of Narambulla IA2. Due to the distances between these two sites, it is considered that they represent separate events.

Narambulla IA1 is located 165 metres north of Narambulla Creek which is a perennial waterway, and as such would have been a reliable water source. One silcrete unidirectional core was recovered from TP1 from a wet, pale yellow silty clay with gravel inclusions. Soil stratigraphy within Narambulla IA1 corresponds to the soil stratigraphy present within site Narambulla ASF1 (#51-6-0918). The excavation of the test pit at this site ended on pale yellow brown silty clay with iron rich gravels at a depth of 400 millimetres. These soils correspond to *Yellow Podzolic Soils*, strongly differentiated duplex soils that are dominated by the accumulation of compounds of organic matter, aluminium and / or iron. Due to the erosional nature of the soils, it is most likely that recovered artefacts are not *in situ*. The isolated nature of the site indicates that it is the remnant of most likely people traversing the area and can be characterized as a 'background noise' of the people's activities in the wider regions.



Plate 7.15 *Site 51-6-0926, facing south*

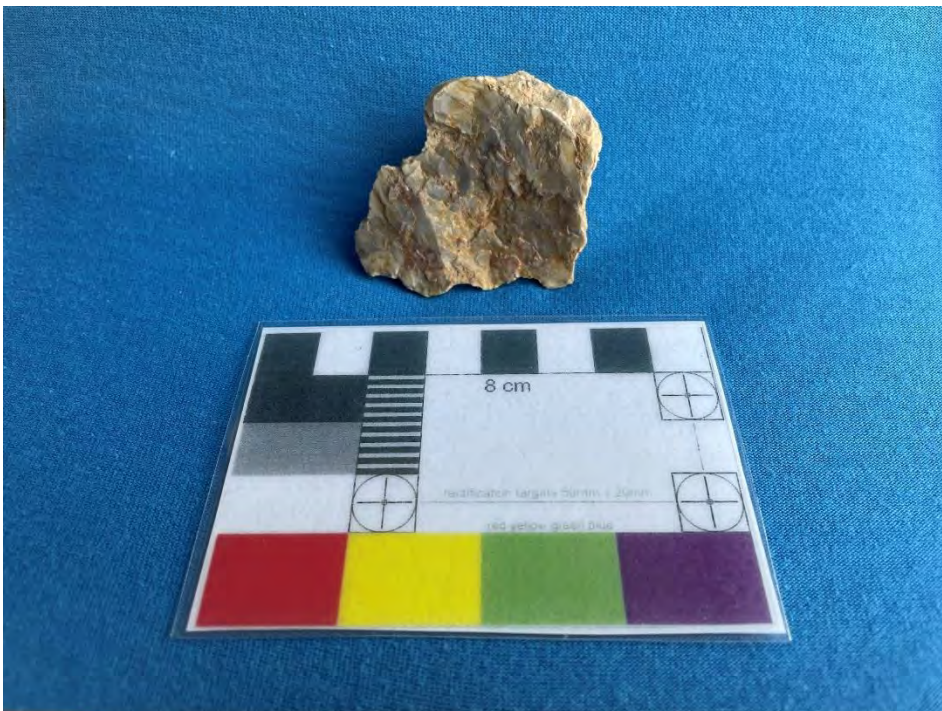


Plate 7.16 *Silcrete core recovered from site 51-6-0926*

7.1.9 Narambulla IA2 (AHIMS #51-6-0916)

Narambulla IA2 (AHIMS #51-6-0916) is an isolated artefact identified during test excavations on the ridgeline landform and is located approximately 125 metres north east of Narambulla IA1. Due to the distances between these two sites, it has been determined that they represent separate events.

Narambulla IA2 is located 160 metres north west of Narambulla creek. Narambulla Creek is a permanent waterway, and as such would have been a reliable source of water. One quartz distal flake was recovered from Narambulla IA2 in a subsurface context from TP5. It was recovered from a firm, brown loamy clay soil layer. An orange brown loamy clay, with a noted increasing clay content at depth to base was encountered at

300 millimetres, as well as an increase in the content of shale. Soil stratigraphy within the site is consistent with *lithosols* that are characteristic of the region, a group of shallow soils lacking well-defined horizons. These are dominated by the presence of weather rock and rock fragments and are commonly found on steep slopes and hill crests. Due to the erosional nature of the soils, it is most likely that recovered artefacts are not *in situ*. The isolated nature of the site indicates that it is the remnant of most likely people traversing the area and can be characterized as a 'background noise' of the people's activities in the wider regions.



Plate 7.17 Site 51-6-0916, facing south east

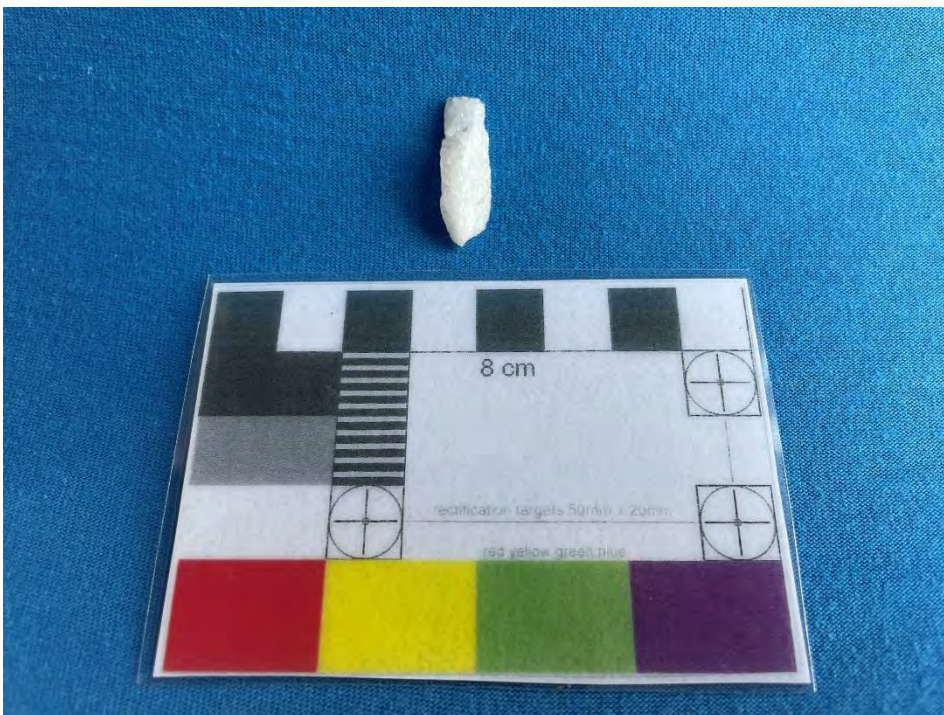


Plate 7.18 Quartz angular fragment recovered from site 51-6-0916

7.1.10 Narambulla IA3 (AHIMS #51-6-0917)

Narambulla IA3 (AHIMS #51-6-0917) is an isolated artefact identified during subsurface excavation on the lower slope landform, approximately 100 metres east of Narambulla ASF2. Due to the distances between the two sites, it is considered that they represent separate event occurrences.

Narambulla IA3 is located 125 metres north of a first order drainage line that empties into Narambulla Creek. This drainage line would only occasionally hold water most likely during the prolonged periods of heavy rain. As such it would not have been a reliable source of water. However, the site is located within 400 metres of Narambulla Creek, which is a perennial waterway which would be reliable. A single quartz distal flake was recovered from TP 46, at a depth of 100 to 200 millimetres. The artefact was recovered from a firm brown loamy clay soil profile with shale pebbles. The soil profile within Narambulla IA3 is consistent with Narambulla ASF2. An orange brown silty clay with increasing clay at depth towards base was encountered at the depths of between 200 to 280 millimetres. Decomposed bedrock was not encountered within these test pits. These soils correspond to *Yellow Podzolic Soils*, which is strongly differentiated duplex soils that are dominated by the accumulation of compounds of organic matter, aluminium and / or iron. Due to the erosional nature of the soils it is most likely that recovered artefacts are not *in situ*. The isolated nature of the site indicates that it is the remnant of most likely people traversing the area and can be characterized as a 'background noise' of the people's activities in the wider regions.



Plate 7.19 Site 51-6-0917, facing south

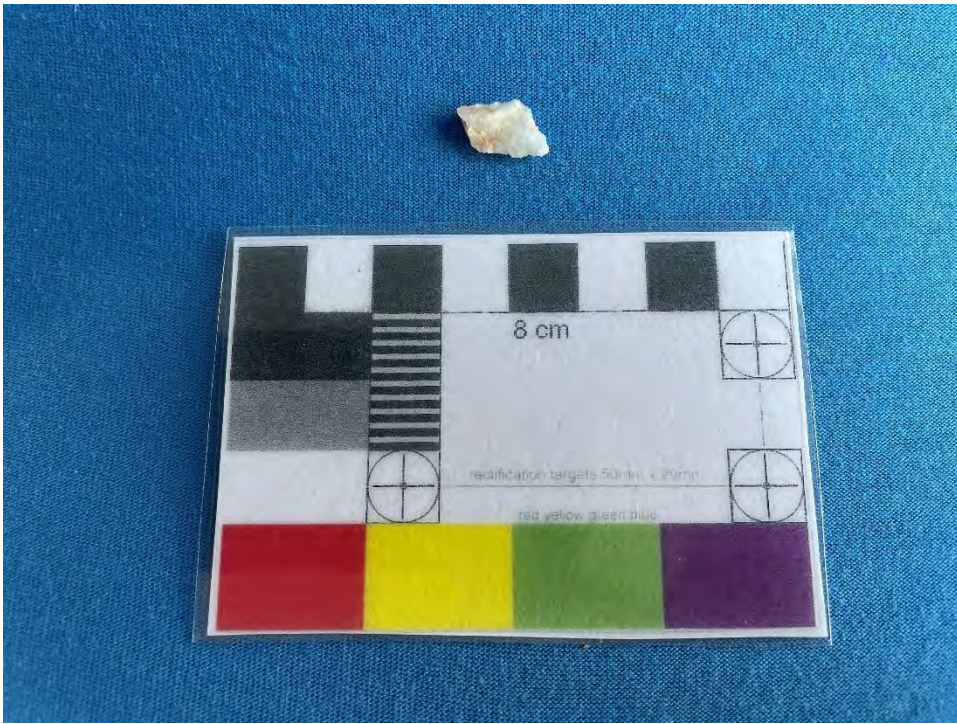


Plate 7.20 *Quartz distal flake recovered from site 51-6-0917*

7.2 Levels of disturbance

Disturbance within the Project Area has primarily been noted within the northwestern aspect of the Project Area adjacent to Winfarthing Road and the Hume Highway, with evidence of past quarrying, stockpiling, and soil erosion control measures. The remainder of the Project Area has sustained minimal disturbance, with the primary disturbance correlating to the bioturbation of soils in relation to ants nests and other animals, such as kangaroos. Surface disturbance was evident along existing farm vehicle tracks and agricultural machinery movement within the Project Area.

7.3 Artefact assemblage

The relatively small artefact count can provide some preliminary observations in relation to others within the Project Area and wider geographic region.

Across the Project Area, a total of 58 surface and 40 subsurface stone artefacts were recorded. Previous investigations within the Project Area by Navin Officer Heritage Consultants (1997) recorded four surface stone artefacts. A total of 98 stone artefacts have been recorded within the Project Area. Within the Project Area, the largest number of stone artefacts were found as part of Narambulla Creek ASF3 (n=45). Narambulla ASF1 had the highest density of artefacts of artefacts due to the identification of nine stone artefacts within TP6 and eight stone artefacts within TP8.

The predominant raw material within the Project Area was identified to be silcrete (n=40, 50%), followed by quartz (n=29, 36%), chalcedony (n=7, 9%), tuff (n=2, 3%), and mudstone (n=1, 1%). The dominance of silcrete within the assemblage is consistent with the proportions encountered in the geographic region. Quartz and chalcedony have also been previously identified within the regional assemblage. The proportion of silcrete is higher to quartz and demonstrates a preference for silcrete within the Project Area.

Primary form within the Project Area was dominated by flakes (n=87, 89%), followed by cores (n=9, 9%) and blades (n=2, 2%). The dominance of flakes can be further broken down into flake fragments (n= 12, 30%), followed by distal flakes (n=7, 18%), complete flakes (n=6, 15%), medial flakes (n=5, 13%), longitudinally broken flakes (n=3, 8%), and proximal flakes (n=1, 3%). All blades identified within the Project Area comprise of distal blades, manufactured from silcrete (n=1, 50%) and quartz (n=1, 50%). Only four cores were recorded as consisting of three unidirectional (n=3, 75%) cores and one bifacial (n=1, 25%) core. All the cores (n=9, 100%) were manufactured from silcrete. Cores only comprised 9% of the assemblage. No formal tools were identified within the assemblage.

The low number of cores and formal tools identified suggests that this area was not utilized for intensive camping or tool manufacture. The composition of tool types comprised of similar percentages across the landforms, with the only difference being the presence of blades within proximity to Narambulla Creek and found nowhere else within the Project Area.

Cortex was recorded on 17% (n=16) of the assemblage. This suggests that the primary reduction of raw materials was conducted outside the activity area and cores subsequently imported. Evidence of retouch or use wear was recorded on 3% (n=3) of the assemblage, all of which consisted of flakes.

Flake platforms were dominated by plain (n=24, 80%) followed by crushed (n=5, 17%) and cortical (n=1, 3%) platforms. Terminations were dominated by feather (n=30, 83%) followed by step (n=3, 8%), hinge (n=1, 3%), plunge (n=1, 3%) and axial (n=1, 3%) terminations. Blade terminations consisted entirely of feather (n=2, 100%) terminations.

The majority of stone artefacts were found in a surface context. The distribution of the artefacts across the landscape demonstrates higher density clusters of artefacts within proximity to permanent waterways, and on hill crests where the elevation would provide a clear view across the landscape. On the hill crests, the predominant raw material for artefacts consisted of silcrete followed by chalcedony, with quartz not being located within a subsurface context. These contrasts the findings associated with Narambulla Creek, in which the predominant raw material type consisted of quartz, followed by silcrete and no occurrences of chalcedony.

Artefacts were most often identified within Spit 1, which generally reached a depth of up to 100 millimetres. The analysis of landform preference is supported by other studies in the area, which indicate that higher densities of artefacts were typically clustered in proximity to waterways.

7.4 Conclusion

In conclusion, it was determined that landforms associated with watercourses will have a higher number of artefacts than surrounding landforms, with perennial waterways having the highest density of cultural material. The presence of artefacts on hill slopes and within the saddle of the Project Area could be the result of post-depositional processes which can influence the presence of cultural material. Hill slopes would most likely have higher instances of artefact occurrence due to the washing out of artefacts from the hill crest. As a result, the hill slopes would have poor site integrity as they are an erosional landscape, with the lower slopes having the highest degree of integrity due to the sediments being buried by downslope movements. In addition, past agricultural and pastoral activities cause spatial and stratigraphic movement of artefacts, and significant land modifications can cause the destruction and removal of cultural material.

Cultural heritage material was recovered from ten sites (AHMS #51-6-0093, #51-6-0095, #51-6-0918, #51-6-0919, #51-6-0920, #51-6-0921, #51-6-0926, #51-6-0916, and #51-6-0917) within the Project Area during the course of the current investigation. With the exception of Narambulla ASF3 (AHMS #51-6-0920), the Aboriginal sites located within the Project Area consist of small assemblage sizes. The artefacts are not considered to be of a significant age due to the landforms and soil profiles from which they were recovered, as well as their artefact types and raw materials. The erosional soils present within the Project Area are not known to contain deep buried deposits, and therefore, the potential for artefacts of a significant age to be present is unlikely.

A total of 40 artefacts were retrieved during subsurface excavations. A total of 48 test pits were excavated, comprising 46 50 x 50 cm test pits and two 1 x 1 metre test pits, resulting in a total excavation area of 13.5 square metres. Artefacts were recovered from all landforms in a total of 18 test pits. The distribution of the artefacts across the landscape indicates the occupation of the area by past Aboriginal people as they traverse the landscape.

The assemblage is indicative of general stone reduction and discard, with no evidence to suggest that the excavated areas were subject to long term occupation. This assemblage is consistent with stone artefact assemblages from the Goulburn-Mulwaree region and the predictive model of the region, with the dominant raw materials used for flaking being silcrete and quartz. Previous predictive modelling suggests that parts of the Project Area had moderate archaeological potential for small camp sites associated with minor waterways and isolated artefacts.

Four Aboriginal sites, including Narambulla Creek ASF1, Narambulla Creek ASF3, Narambulla IA1, and Narambulla IA2 are situated within 200 metres of Narambulla Creek. Aboriginal occupation along the ridge is likely to have been transient, with several sites within the Project Area likely being representative of short-term camping grounds. The most suitable locations for short-term occupation within the Project Area is on the plains adjacent to Narambulla Creek due to its proximity to water.

8. Significance Assessment

8.1 Aboriginal Cultural Heritage

There are ten Aboriginal sites currently situated within the Project Area. Three of these sites were previously recorded (AHIMS #51-6-0093, #51-6-0094, and #51-6-0095). There were seven newly identified Aboriginal sites, consisting of four artefact scatters and three isolated artefacts. These sites have been registered with AHIMS.

8.2 Significance Assessment

The Australia ICOMOS Burra Charter defines the principles and procedures for the conservation and management for items of cultural significance within Australia (Australia International Council of Monuments and Sites (ICOMOS), 2013). The Burra Charter is the industry standard when providing advice and recommendations on places or objects of cultural heritage significance. Cultural significance is used in Australian heritage practice to include all of the cultural values and meanings that may be ascribed to a place (Australian ICOMOS, 2013).

The Burra Charter defines cultural significance as follows:

“Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups (ICOMOS 2013).”

The determination of cultural heritage significance is based on the five aspects of cultural significance as summarised in Table 8.1 below. In relation to each of the criteria, the significance of the Project Area will be ranked as high, moderate or low under each statement of significance.

Table 8.1 Cultural significance definitions for determining cultural significance (values) (ICOMOS, 2013b)

Significance Aspect	Definitions	Assessment
Aesthetic significance	<i>Aesthetic value refers to the sensory and perceptual experience of a place—that is, how we respond to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings, and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals. Expressions of aesthetics are culturally influenced.</i>	<i>In considering aesthetic value, ask:</i> – Does the place have special compositional or uncommonly attractive qualities involving combinations of colour, textures, spaces, massing, detail, movement, unity, sounds, scents? – Is the place distinctive within the setting or a prominent visual landmark? – Does the place have qualities which are inspirational or which evoke strong feelings or special meanings? – Is the place symbolic for its aesthetic qualities: for example, does it inspire artistic or cultural response, is it represented in art, photography, literature, folk art, folk lore, mythology or other imagery or cultural arts? – Does the place display particular aesthetic characteristics of an identified style or fashion? – Does the place show a high degree of creative or technical achievement? (ICOMOS, 2013b, p. 3)
Historic significance	<i>Historic value is intended to encompass all aspects of history—for example, the history of aesthetics, art and architecture, science, spirituality, and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, an historic event, phase, movement or activity, person, or group of people. It may be the site of an important event. For any place the</i>	<i>To help understand the historic value of a place, ask:</i> – Is the place associated with an important event or theme in history? – Is the place important in showing patterns in the development of history locally, in a region, or on a state-wide, or national or global basis? – Does the place show a high degree of creative or technical achievement for a particular period? – Is the place associated with a particular person or cultural group important in the history of the local area, state, nationally or globally? (ibid, p.3)

Significance Aspect	Definitions	Assessment
	<i>significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence.</i>	
Scientific significance	<i>Scientific value refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions. To establish potential, it may be necessary to carry out some form of testing or sampling. For example in the case of an archaeological site, this could be established by a test excavation.</i>	To appreciate scientific value, ask: – Would further investigation of the place have the potential to reveal substantial new information and new understandings about people, places, processes or practices which are not available from other sources? (ibid, p.3)
Social significance	<i>Social value refers to the associations that a place has for a particular community or cultural group and the social or cultural meanings that it holds for them.</i>	To understand social value, ask: – Is the place important as a local marker or symbol? – Is the place important as part of community identity or the identity of a particular cultural group? – Is the place important to a community or cultural group because of associations and meanings developed from long use and association (ibid, p.3)?
Spiritual significance	<i>Spiritual value refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art, and practices of a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places.</i> <i>The qualities of the place may inspire a strong and/or spontaneous emotional or metaphysical response in people, expanding their understanding of their place, purpose, and obligations in the world, particularly in relation to the spiritual realm.</i> <i>The term spiritual value was recognised as a separate value in the Burra Charter, 1999. It is still included in the definition of social value in the Commonwealth and most state</i>	<i>In order to help appreciate the spiritual value of a cultural heritage place, the ICOMOS Practice Note documents:</i> – Does the place contribute to the spiritual identity or belief system of a cultural group? – Is the place a repository of knowledge, traditional art or lore related to spiritual practice of a cultural group? – Is the place important in maintaining the spiritual health and wellbeing of a culture or group? – Do the physical attributes of the place play a role in recalling or awakening an understanding of an individual or a group's relationship with the spiritual realm? – Do the spiritual values of the place find expression in cultural practices or human-made structures, or inspire creative works? (ibid, p.3)

Significance Aspect	Definitions	Assessment
	<i>jurisdictions. Spiritual values may be interdependent on the social values and physical properties of a place.</i>	

The *Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) also provides guidelines for assessment of significance with reference to the Burra Charter (Australia ICOMOS 2013). It provides guidance on identification of the cultural/social significance of Aboriginal objects and/or places to Aboriginal people and the identification of the scientific (archaeological) significance to the scientific/research community.

The assessment of scientific (archaeological) significance is largely guided by the Aboriginal Cultural Heritage Standards and Guidelines Kit (DEC 1997) using the following criteria:

- **Research potential:** does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- **Representativeness:** how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- **Rarity:** is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practiced? Is it in danger of being lost or of exceptional interest?
- **Education potential:** does the subject area contain teaching sites or sites that might have teaching potential?

In relation to each of the criteria above, the significance of Aboriginal objects or places within the Project Area will be ranked as high, moderate or low (Table 8.2).

Table 8.2 Cultural significance definitions for determining scientific significance (values) (ICOMOS, 2013b)

Level of significance	
Low	<i>The site or object contains only a single or limited number of features, and has no potential to meaningfully inform our understanding of the past beyond what it contributes through its current recording (i.e. no or low research potential). The site or object is a representative but unexceptional example of the most common class of sites or objects in the region. Many more similar examples can be confidently predicted to occur within the Project Area, and in the region.</i>
Moderate	<i>The site or object derives value because it contains features, both archaeological and contextual, which through further investigation may contribute to our understanding of the local past. These features include, but are not limited to: the relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a relatively large assemblage of stone artefacts. The presence of a diverse artefact and feature assemblage, and connectedness with landscape features and other notable sites provide relatively higher representative and rarity values than sites of low significance.</i>
High	<i>The site or object has value because it contains archaeological and/or contextual features which through further investigation may significantly contribute to our understanding of the past, both locally and on a regional scale. These features include, but are not limited to: Aboriginal ancestral remains; the site's relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a very large assemblage of stone artefacts associated with other features such as oven remains or shell midden. Such sites will be relatively rare, and will be representative of a limited number of similar sites that make up this class; hence they derive high representative and rarity values.</i>

8.3 Statement of Significance – MF1 (51-6-0093)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.3.1 Aesthetic Significance

Aboriginal site MF1 (AHIMS #51-6-0093) has not been subjected to significant modification over the historical period through to the present. Ground disturbance within the Aboriginal site has been associated with the laying of underground fibre optic cable. There has not been extensive clearing of vegetation identified during the course of survey. The Project Area has aesthetic significance as representative of past landscapes.

However, the recovered objects associated with MF1 are mostly functional in design rather than aesthetic, and therefore these qualities are low in association with the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

8.3.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location to Aboriginal people or communities.

8.3.3 Scientific Significance

Table 8.3 Scientific Significance Assessment of MF1

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Representativeness	Rarity	Overall Scientific Significance Rating
51-6-0093	MF1	Artefact Scatter	MF1 has been reclassified from an isolated artefact to represent an artefact scatter. MF1 is located within a saddle and is most likely in a disturbed context due to the laying of fibre optic cable. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, MF1 is considered to have low scientific (archaeological) significance.

8.3.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the limited amount of cultural material recovered from MF1 it is most likely not an important local marker or symbol, nor does it suggest evidence of long-term use.

While the broader region has a rich prehistory, as demonstrated by previous archaeology, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.3.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to MF1 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.4 Statement of Significance – MF3 (51-6-0094)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.4.1 Aesthetic Significance

Aboriginal site MF3 (AHIMS #51-6-0094) has been subjected to some modification over the historical period through to the present. This modification has taken the form of pastoral clearing at the site. However, there has not been extensive clearing of the vegetation within the area, and the clearing abuts an area of open woodland. Nearby archaeological test excavations to the site have revealed that there are no disturbances to topsoils in the region. Furthermore, the positioning of MF3 on the mid-slope would provide a vantage point across the landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. The Project Area has aesthetic significance as representative of past landscape types.

However, the objects associated with MF3 from the 1998 survey were more function in design than aesthetic, and therefore these qualities are considered to be low in association with the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

8.4.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.4.3 Scientific Significance

Table 8.4 Scientific Significance Assessment of MF3

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0094	MF3	Artefact Scatter	MF3 is an artefact scatter located on the mid-slope of a minor spur. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, MF3 is considered to retain its classification as having low scientific (archaeological) significance.

8.4.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the limited amount of cultural material recovered from MF3 (51-6-0094) it is most likely not an important local marker or symbol, nor does it suggest evidence of longer term use.

While the broader region has a rich prehistory, as demonstrated by previous archaeology, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.4.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to MF3 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.5 Statement of Significance – MF2 (51-6-0095)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.5.1 Aesthetic Significance

Aboriginal site MF2 (AHIMS #51-6-0095) has been subject to significant modification over the historical period through to the present. MF2 is found adjacent and extending into a graded access road that has been utilized for a mushroom substrate facility south the of the Project Area. At the time of the 1998 survey, the area was devoid of vegetation and leaf litter. The Project Area has aesthetic significance as representative of past landscape types.

However, the recovered objects associated with MF2 are mostly functional in design than aesthetic, and therefore these qualities are low in association with the artefact assemblage.

The Project Area is of low aesthetic significance in terms of Aboriginal heritage.

8.5.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.5.3 Scientific Significance

Table 8.5 *Scientific Significance Assessment of MF2*

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Representativeness	Rarity	Overall Scientific Significance Rating
51-6-0095	MF2	Artefact Scatter	MF2 consists of an artefact scatter within a broad shallow saddle, in a cleared gravelly area adjacent to an access route. It is a common site type to the region and consists of typical artefact types and raw materials. The initial quartz flake identified by Navin (1998) demonstrates the importation of raw materials into the locality.	Low	Low	Low	Low

Overall, MF2 is considered to have low scientific (archaeological) significance.

8.5.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the limited amount of cultural material recovered from Narambulla Creek MF2 it is most likely not an important local marker or symbol, nor does it suggest evidence of longer term use.

While the broader region has a rich prehistory, as demonstrated by previous archaeology, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.5.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to MF2 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.6 Statement of Significance – Narambulla Creek ASF1 (51-6-0918)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.6.1 Aesthetic Significance

Aboriginal site Narambulla Creek ASF1 (AHIMS # 51-6-0918) has not been subject to significant modification over the historical period through to the present. A form of modification within the proximity to this site has been primarily associated with the construction of the convict trig station on the crest of Shelley's Hill. There has not been extensive clearing of vegetation, with archaeological test excavations revealing no disturbances to topsoils across the site. The elevation of Narambulla ASF1 on the hill crest would provide a vantage point across the

landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. The Project Area has aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla Creek ASF1 are mostly functional in design than aesthetic, and therefore these qualities are considered to be low in association with the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

8.6.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.6.3 Scientific Significance

Table 8.6 Scientific Significance Assessment of Narambulla Creek ASF1

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0918	Narambulla Creek ASF1	Artefact Scatter	Narambulla Creek ASF1 consists of a low density artefact scatter on the upper slope of a ridgeline landform in a undisturbed context. It is a common site type to the region, and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla Creek ASF1 is considered to have low scientific (archaeological) significance.

8.6.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the limited amount of cultural material recovered from Narambulla Creek ASF1 it is most likely not an important local marker or symbol, nor does it suggest evidence of longer-term use.

While the broader region has a rich prehistory, as demonstrated by previous archaeology, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.6.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla Creek AFS1 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.7 Statement of Significance – Narambulla Creek AFS2 (51-6-0919)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.7.1 Aesthetic Significance

Aboriginal site Narambulla Creek ASF2 (AHIMS #51-6-0919) has not been subject to modification over the historical period through to the present. The site currently is vegetated with open woodland. The landscape context of the study remains intact, with archaeological test excavation revealing no disturbance to topsoils across the landform. The Project Area has moderate aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla Creek ASF2 are mostly functional in design than aesthetic, and therefore these qualities are considered to be low in association with the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

8.7.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.7.3 Scientific Significance

Table 8.7 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0919	Narambulla Creek ASF2	Artefact Scatter	Narambulla Creek ASF2 consists of a low density artefact scatter on the lower hill slope in an undisturbed context. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla Creek ASF2 is considered to have low scientific (archaeological) significance.

8.7.4 Social Significance

The site is of social significant to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In this sense, all Aboriginal cultural heritage material can have social values. Given the limited amount of cultural material recovered from Narambulla Creek ASF2, it is most likely not an important local marker or symbol, nor does it suggest evidence of longer term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.7.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla Creek AFS2 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.8 Statement of Significance – Narambulla Creek ASF3 (51-6-0920)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.8.1 Aesthetic Significance

Aboriginal site Narambulla Creek ASF3 (AHIMS #51-6-0920) has not been subject to modification over the historical period through to the present. The site is currently vegetated with open grasslands and low-lying shrub. The landscape context of the site remains intact, with archaeological test excavation revealing no disturbance to topsoils across the landform. The Project Area has moderate aesthetic significance as representative of past landscape types. The Project Area has moderate aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla Creek ASF3 are more functional in design than aesthetic and therefore these qualities are considered to be low in associated within the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage

8.8.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.8.3 Scientific Significance

Table 8.8 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Representativeness	Rarity	Overall Scientific Significance Rating
51-6-0920	Narambulla Creek ASF3	Artefact Scatter	Narambulla Creek ASF3 consists of an artefact scatter located adjacent to the western boundary of Narambulla Creek within an eroding landform. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Moderate	Low-Moderate

Overall, Narambulla Creek ASF3 is considered to have low scientific (archaeological) significance.

8.8.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the amount of cultural material recovered from Narambulla Creek ASF3 suggests evidence of short-term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.8.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla Creek AFS3 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.9 Statement of Significance – Narambulla Creek ASF4 (51-6-0921)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.9.1 Aesthetic Significance

The Aboriginal site Narambulla Creek ASF4 (51-6-0921) has not been subjected to modification over the historical or modern period, with vegetation in the area comprising of open woodland. The landscape context of the Project Area remains intact, with archaeological excavation revealing no disturbance to topsoils across the landform. The elevation of Narambulla ASF4 on the slope of a ridge associated with Shelly's Hill would provide a vantage point across the landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. The Project Area has moderate aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla Creek ASF4 are more functional in design than aesthetic and therefore these qualities are considered to be low in association with the artefact assemblage.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage

8.9.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.9.3 Scientific Significance

Table 8.9 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0921	Narambulla Creek ASF4	Artefact Scatter	Narambulla Creek ASF4 consists of an artefact scatter located on a very gentle slope of a ridge landform. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla Creek ASF4 is considered to have low scientific (archaeological) significance.

8.9.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the limited amount of cultural material recovered from Narambulla Creek ASF4 it is most likely not an important local marker or symbol, nor does it suggest evidence of longer term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.9.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla Creek AFS4 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.10 Statement of Significance – Narambulla IA1 (51-6-0926)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.10.1 Aesthetic Significance

The Aboriginal site Narambulla IA1 (AHIMS #51-6-0926) not been subjected to modification over the historical or modern period, with vegetation in the area comprising of open woodland. The landscape context of the Project Area is intact, with archaeological test excavations revealing no disturbances to topsoils across most landforms throughout the Project Area. The elevation of Narambulla IA1 on a ridgeline associated with Shelly's Hill would provide a vantage point across the landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. This site was identified as having low aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla IA1 are more functional in design than aesthetic and therefore these qualities are considered to be low in associated within the single silcrete stone artefact.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage

8.10.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.10.3 Scientific Significance

Table 8.10 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0926	Narambulla IA1	Isolated artefact	Narambulla IA1 consists of an isolated artefact located on the ridgeline landform. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla IA1 is considered to have low scientific (archaeological) significance.

8.10.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the amount of cultural material recovered from Narambulla IA1 suggests evidence of short term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.10.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla IA1 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.11 Statement of Significance – Narambulla IA2 (#51-6-0916)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.11.1 Aesthetic Significance

Aboriginal site Narambulla IA2 (AHIMS #51-6-0916) has not been subject to modification over the historical period through to the present. The site currently is vegetated with open woodland. The landscape context of the study remains intact, with archaeological test excavation revealing no disturbance to topsoils across the landform. The Project Area has moderate aesthetic significance as representative of past landscape types. The elevation of Narambulla IA2 on a ridgeline associated with Shelly's Hill would provide a vantage point across the landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. However, the recovered object associated with Narambulla IA2 is mostly functional in design than aesthetic, and therefore these qualities are considered to be low in association with the single quartz stone artefact.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

8.11.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.11.3 Scientific Significance

Table 8.11 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0916	Narambulla IA2	Isolated artefact	Narambulla IA2 consists of an isolated artefact on a ridgeline landform. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla IA2 is considered to have low scientific (archaeological) significance.

8.11.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the amount of cultural material recovered from Narambulla IA2 suggests evidence of short term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.11.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla IA2 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.12 Statement of Significance – Narambulla IA3 (51-6-0917)

The following statements of significance have been determined based on the significance assessment criteria and in consultation with any comments received from RAPs.

8.12.1 Aesthetic Significance

The Aboriginal site Narambulla IA3 (AHIMS #51-6-0917) has been subjected to modification over the historical or modern period, with vegetation in the area comprising of open woodland. The landscape context of the Project Area is intact, with archaeological test excavations revealing no disturbances to topsoils across most landforms throughout the Project Area. The elevation of Narambulla IA3 on a lower slope would provide a vantage point across the landscape, allowing Aboriginal people to see both the surrounding landscape, and the movement of other people as they traverse the land. This site was identified as having low aesthetic significance as representative of past landscape types.

However, the recovered objects associated with Narambulla IA3 are more functional in design than aesthetic and therefore these qualities are considered to be low in associated within the single quartz stone artefact.

The Project Area is considered to be of low aesthetic significance in terms of Aboriginal heritage

8.12.2 Historic Significance

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities.

The Project Area is not known to have any historic associations with regard to location Aboriginal people or communities.

8.12.3 Scientific Significance

Table 8.12 Scientific Significance Assessment of Aboriginal sites within the Project Area

AHIMS	Site Name	Site type	Statement of significance	Research Potential	Represent ativeness	Rarity	Overall Scientific Significance Rating
51-6-0917	Narambulla IA3	Isolated artefact	Narambulla IA3 consists of an isolated artefact located on the ridgeline landform. It is a common site type to the region and consists of typical artefact types and raw materials.	Low	Low	Low	Low

Overall, Narambulla IA3 (51-6-0917) is considered to have low scientific (archaeological) significance.

8.12.4 Social Significance

The Project Area is of social significance to the Aboriginal community because it contains landscapes and resources that help define the communities' identity. The identification of previously unrecorded Aboriginal places can connect Aboriginal people with their past and their country. In that sense, all Aboriginal cultural heritage material can have social value. Given the amount of cultural material recovered from Narambulla IA3 suggests evidence of short-term use.

While the broader region has a rich prehistory as demonstrated by previous archaeological investigations, the Project Area does not retain social values.

The social value is therefore considered to be low.

8.12.5 Spiritual Significance

The intangible values and meanings associated with a place gives importance to the spiritual identity or traditional knowledge held by Aboriginal people and the community.

No components relating to Narambulla IA3 were identified during the test excavations which could contribute to spiritual identity. As such, the spiritual value of this site is considered to be low and will be confirmed with RAPs during the review of the draft ACHAR.

8.13 Significance of the Project Area

The Project Area contains ten Aboriginal sites that have been that have been largely assessed as having low scientific significance. Narambulla ASF3 was assessed to have low-moderate scientific significance. The land on which the Project Area is situated is considered to have social significance for the Aboriginal community. The Project Area has been assessed as having low historical and aesthetic significance.

Based on the results of archaeological investigations of the Project Area, it is considered that the area demonstrated low significance.

9. Impact Assessment

9.1 Summary of impacts

The proposed works associated with the Marulan Quarry include the extraction of up to 500,000 tonnes per year of hard rock, the establishment of primary processing facilities, a haul route from an existing forestry haul road, and site rehabilitation through the emplacement of virgin excavated natural material, excavated natural material and other clean fill.

Ground disturbing works associated with the quarry are currently proposed to be associated along the eastern border of the Project Area, with the quarry situated over Shelley's Hill. These works will result in the disturbance and removal of soils throughout the quarry footprint and at the sites of associated works.

The proposed works would result in direct impacts to sites: MF2 (51-6-0095), MF3 (51-6-0094), Narambulla AFS1 (51-6-0918), Narambulla AFS2 (51-6-0919), Narambulla AFS3 (51-6-0920), Narambulla IA2 (51-6-0916), and Narambulla IA3 (51-6-0917).

The location of the Aboriginal sites and the landforms in which they are situated cannot be avoided by the current proposed quarry ground disturbing works. Works across the landform can be limited to within a works zone to minimise potential harm to unrecovered Aboriginal cultural material that may occur in the broader landform feature.

9.1.1 Avoidance of harm

The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011)* requires that both direct and indirect harm be considered. Direct harm refers to instances where an activity physically impacts a known site or object, directly affecting the heritage values attributed to that site or object. Indirect harm refers to harm associated with ancillary impacts of the activity and may affect sites or objects as a result of this activity. Examples of such indirect harm are pedestrian movement across a site to allow access.

The proposed activities associated with the development of Marulan Quarry has the potential to harm Aboriginal objects through the disturbance of topsoils for the proposed quarry and associated infrastructure.

9.2 Management and Mitigation Measures

Heritage management ideally consists of the conservation of sites through the preservation and conservation of the context of the site. In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, and the retrieval of information through excavation or collection and interpretation.

Avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy and should be implemented where practical. Impacts to Aboriginal sites are likely to occur due to their locations largely within the current proposed design footprint.

Artefact scatters MF2 (51-6-0095), MF3 (51-6-0094), Narambulla AFS1 (51-6-0918), Narambulla AFS2 (51-6-0919), and Narambulla AFS3 (51-6-0920) are situated within alluvial-colluvial soils. Testing of the hill crest and lower hill slope where Narambulla AFS1 and Narambulla ASF2 are located, respectively, confirmed that the area contains artefacts in small densities that are common to the wider region and are considered to have low scientific significance. Due to the higher number of artefacts recovered from Narambulla AFS3 its significance is assessed as low-moderate in conjunction with being considered to be a common site type in the region.

Isolated artefacts Narambulla IA2 (51-6-0916) and Narambulla IA3 (51-6-0917) were identified within shallow lithosols and podzolic soils. Further testing the areas in proximity to these sites did not identify any additional artefacts, and as a result, their significance is assessed as low.

Management recommendations for the impact of Aboriginal sites within the proposed works and the associated landforms are provided in Table 9.1 below and will be detailed in the ACHMP.

Table 9.1 *Management and Mitigation Measure for Aboriginal cultural heritage*

Site Name	AHIMS	Impact	Mitigation Measure	Timing
MF1	51-6-0093	Avoidance Mitigation	Identification of site boundaries. Fencing to be put in place. Included in Cultural Heritage Induction to all contractors.	Pre-construction
MF3	51-6-0094	Impact Cultural Heritage Management	Targeted surface collection may be considered for cultural materials	Pre-construction
MF2	51-6-0095	Impact Cultural Heritage Management	Targeted surface collection may be considered for cultural materials	Pre-construction
Naramballa ASF1	51-6-0918	Impact Cultural Heritage Management	Salvage	Pre-construction
Naramballa ASF2	51-6-0919	Avoidance Mitigation	Identification of site boundaries. Fencing to be put in place. Included in Cultural Heritage Induction to all contractors.	Pre-construction
Naramballa ASF3	51-6-0920	Partial Impact Cultural Heritage Management	Salvage	Pre-construction
Naramballa ASF4	51-6-0921	Avoidance Mitigation	Identification of site boundaries. Fencing to be put in place. Included in Cultural Heritage Induction to all contractors.	Pre-construction
Naramballa IA1	51-6-0926	Avoidance Mitigation	Identification of site boundaries. Fencing to be put in place. Included in Cultural Heritage Induction to all contractors.	Pre-construction
Naramballa IA2	51-6-0916	Impact Cultural Heritage Management	Targeted surface collection may be considered for cultural materials	Pre-construction
Naramballa IA3	51-6-0917	Impact Cultural Heritage Management	Targeted surface collection may be considered for cultural materials	Pre-construction

10. Recommendations

The following recommendations are based in consideration of the statutory requirements under the *National Parks and Wildlife Act 1974*, as well as the recommendations of previous assessments within the Project Area, the interests of the Aboriginal stakeholder groups, and the likely impacts of the proposed development.

10.1.1 Recommendation 1: Development of an Aboriginal Cultural Heritage Management Plan

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared in consultation with the RAPs before commencement of ground disturbing works that have the potential to impact the surface. The ACHMP should be reviewed and endorsed by DPE – Environment and Heritage. The ACHMP would include detailed methodology for all mitigation measures outlined in Table 9.1.

The ACHMP will address project impacts and will provide details on:

- Aboriginal sites identified for the project
- The surface collection and subsurface salvage of areas where there will be direct impact to cultural material
- Management measure and their progress towards completion
- Continuing consultation and the involvement of RAPs
- Cultural Awareness Inductions for all contractor staff
- Protocols for Aboriginal cultural material finds
- Protocols for suspected human skeletal remains
- Provision for review and updates of the ACHMP.

10.1.2 Recommendation 2: Ongoing RAP Consultation

It has been recommended by the RAPs of the project that through consultation with local Aboriginal community members (where appropriate) the proponent uses locally accepted First Nations language words for the naming of Project infrastructure.

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Appendix D

Consultation Log

